Part 75
Emissions Monitoring
Policy Manual

U.S. Environmental Protection Agency
Clean Air Markets Division
Washington, D.C.

October 28, 2003

TABLE OF CONTENTS

INTRODUCTION

In order to reduce acid rain in the United States and Canada, Title IV of the Clean Air Act Amendments of 1990 established the Acid Rain Program. The program will cut sulfur dioxide emissions in half and substantially reduce nitrogen oxide emissions from electric utility plants. To achieve these reductions at the lowest cost to society, the program employs both traditional regulatory techniques and innovative, market-based approaches. The centerpiece of the program is the allowance trading system, under which affected utility units are allocated "allowances" (each "allowance" permits a utility to emit one ton of SO_2) based on historical fuel consumption and specified emission rates. The allowances can be traded as commodities.

To ensure that allowances are consistently valued and to ensure that all of the projected emission reductions are in fact achieved, it is necessary that actual emissions from each affected utility unit be accurately determined. To fulfill this function, Title IV requires that affected units continuously measure and record their SO_2, NO_x, and CO_2 emissions, as well as volumetric flow, opacity, and diluent gas levels. Most plants will fulfill these requirements by using continuous emission monitoring systems. The EPA initially promulgated regulations for Acid Rain Program continuous emission monitoring (CEM) requirements at 40 CFR Part 75 on January 11, 1993 (58 FR 3590) and has published interim and direct final rule revisions to Part 75 as well as technical revisions since that time. The most recent revisions include extensive rule revisions published on June 12, 2002 (67 FR 40394).

This manual in the past addressed policy questions involving the implementation of the Acid Rain CEM (40 CFR Part 75) and NO_x (40 CFR Part 76) Programs, and was titled the Acid Rain Program Policy Manual. The Part 76 requirements have been implemented fully for the most part, while Part 75 now has been adopted by other trading programs, including NO_x trading programs. As a result, we have changed the title of the manual to "Part 75 Emissions Monitoring Policy Manual" to reflect the focus of the manual on these monitoring requirements.

This manual provides a series of Questions and Answers that can be used on a nationwide basis to ensure that Part 75 requirements are applied consistently for all affected sources. The manual includes a general table of contents that lists the major topic area and a separate table of contents for each topic area that identifies the appropriate page reference for each Question and Answer applicable to that area. At the end of this manual, a key word index is provided that identifies for each key word the question number(s) where an issue concerning that key word is addressed.

This manual is intended to be a living document. The EPA will issue new Questions and Answers as they arise and will revise previously issued Questions and Answers as necessary to provide clarification. The "History" information in each answer indicates when the question and answer was originally published and when, if applicable, it was retired or revised. The table of contents for each section also identifies which questions and answers have been retired or revised. (Note that minor typographical corrections or non-substantive revisions are not reflected in the "History" or in the listing of a question as "Revised." For instance, EPA has updated references throughout the manual to refer to EDR v2.1/2.2 to reflect that either of these EDR versions may apply, as applicable.)

It should be noted that the materials in this manual are guidance materials only and are intended to clarify the regulations. This document is not intended, nor can it be relied upon, to create any rights

enforceable by any party in litigation with the United States. EPA may decide to follow the guidance provided in this document, or to act at variance with this guidance, based on its analysis of the specific facts presented. This guidance may be revised without public notice to reflect changes in EPA's approach to implementation, or to clarify and update text.

The contents of this manual are available to the general public through the Internet on the Clean Air Markets homepage. The electronic version is provided in an Adobe Acrobat file (pdf format). Updates to the manual will be issued as separate Adobe Acrobat files. Periodically, EPA will reissue a complete manual that incorporates the updates. This version of the manual includes the original March 11, 1993 version, Updates #1 through #13 to that original version, and a complete revision in October 2003 to reflect the June 12, 2002 revisions to the Part 75 regulations.

If after reviewing the regulations and this manual, the reader still has an unresolved issue, the reader should contact the appropriate EPA Headquarters or Regional Office contact. You can find a contacts list on the Clean Air Markets Division website (www.epa.gov/airmarkets).

SECTION 1
GENERAL

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Question 1.1 RETIRED

Question 1.2

Topic: Time-shared Analyzers

Question: If two individual probes (for example, where the probes are installed in two different ducts) share an analyzer, are they considered individual monitoring systems?

Answer: Yes. The minimum data capture requirements of § 75.10(d)(1) therefore apply to each system separately (i.e., a minimum of one cycle of operation (sampling, analyzing, and data recording) must be completed in each successive 15-minute interval, for each monitoring system).

References: § 75.10(d)

Key Words: Time-sharing

History: First published in May 1993, Update #1; revised in October 1999 Revised Manual

Question 1.3

Topic: Acceptable Monitors

Question: Are all types of monitors, including in-situ monitors, appropriate for use in the Part 75 program?

Answer: Yes, all types of CEMS are appropriate for use in the CEM program as long as the CEMS is able to meet the design specifications, all the initial performance test requirements, and the annual, semi-annual, quarterly, and daily QA/QC requirements of Part 75.

References: § 75.10, § 75.66(l)

Key Words: Monitors, Petitions

History: First published in November 1993, Update #2

Question 1.4 REVISED

Topic: Use of Optical In-situ Monitoring

Question: Can I use an optical in-situ monitoring system for monitoring under Part 75 ? If so, how do I challenge the system with calibration gases and what procedure should I use to calculate the required gas tag values?

Answer: Yes. An optical in-situ system may be used so long as it is approved under the Part 75 regulations via issuance of a monitoring system certification. This means the system must undergo all required tests and pass. To test the instrument linearity and calibration error, EPA Protocol gases must be used. The use of a calibration cell that is placed in the measurement path is acceptable. The calibration cell must be located so as to challenge the entire measurement system. This is analogous to the injection of calibration gas to the probe tip of extractive systems.

For path measurement systems where the calibration gas materials are introduced into a cell of different optical path length than the measurement optical path length, use the following equation to calculate the calibration gas tag values needed for daily calibration error tests or linearity checks:

$$EAV = SAV * \left(\frac{MPL}{CCPL} \right)$$

Where:

EAV = Equivalent Audit Value
SAV = Specified Audit Value
MPL = Measurement Path Length
CCPL = Calibration Cell Path Length

The EAV is the actual tag value of the EPA protocol gas to be injected. The SAV is the required reference gas concentration specified in Section 5.2 of Appendix A of the rule as a percentage of the calculated span value.

The design should be such that the audit calibration gas is maintained at the same temperature and pressure as the stack gas to be measured. Alternatively, the owner or operator could determine the calibration cell temperature and apply appropriate corrections to the audit measurements to represent monitor performance at actual effluent conditions, subject to the approval of the Administrator. Any such petitions must be approved by the Administrator prior to implementation of acceptable testing.

References: § 75.10

Key Words: Monitors

History: First published in March 1995, Update #5; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 1.5 RETIRED

Question 1.6 RETIRED

Question 1.7 RETIRED

Question 1.8 RETIRED

Question 1.9 RETIRED

Question 1.10 RETIRED

Question 1.11 RETIRED

Question 1.12 RETIRED

Question 1.13 RETIRED

Question 1.14 RETIRED

Question 1.15 REVISED

Topic: PEMS

Question: Is EPA considering allowing the use of Predictive Emissions Monitoring Systems (PEMS)?

Answer: Yes. EPA is conducting a PEMS study. The Agency has done some preliminary background work and field testing to determine whether the use of PEMS should be allowed for particular source categories (e.g., gas turbines) under the Acid Rain Program or Subpart H. Thus far, the scope of the work has been limited to evaluating NO_x PEMS at gas-fired turbines and boilers.

Until the PEMS study is complete, sources may petition to use a PEMS as an alternative monitoring system, in accordance with §75.66 and Subpart E of Part 75. EPA has conditionally approved NOx PEMS petitions.

Question 1.16 REVISED

Topic: Exemptions From Part 60 Requirements

Question: My facility is subject to continuous monitoring requirements under both 40 CFR Part 60 and 40 CFR Part 75. Part 75 allows us to claim an exemption from linearity testing of our gas monitors for quarters in which the unit operates for fewer than 168 hours. May I obtain a similar exemption from the Part 60, Appendix F quality assurance provisions for quarterly cylinder gas audits (which are similar to Part 75 linearity checks) for quarters in which the unit operates for fewer than 168 hours?

Answer: You may only obtain an exemption from the Part 60 cylinder gas audit (CGA) requirement if the permitting authority allows it. When a source is regulated under different programs with similar rule provisions (in this case, linearity checks and cylinder gas audits), the facility must comply with each of these rule provisions separately, unless the regulatory agency allows exceptions to this. Therefore, unless the permitting authority in the region or state stipulates otherwise, you would have to follow the procedures of Part 60, Appendix F, which require quarterly cylinder gas audits, even for quarters in which the unit operates for fewer than 168 hours.

References: 40 CFR Part 60, Appendix F; 40 CFR Part 75, Appendix B, Section 2.2.3(f)

Key Words: Quality assurance

History: First published in March 2000, Update #12; revised in October 2003 Revised Manual

Question 1.17 RETIRED

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SECTION 2
SO_2 MONITORING

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Question 2.1 RENUMBERED AS QUESTION 23.1

Question 2.2 RETIRED

Question 2.3 RETIRED

Question 2.4 RETIRED

Question 2.5 RETIRED

Question 2.6

Topic: SO_2 Monitoring for Gas-only Hours

Question: If I have an oil or coal unit with an SO_2 CEMS that occasionally burns solely natural gas, may I use a different monitoring approach for SO_2 for hours when I burn only natural gas or may I continue to use an SO_2 CEMS?

Answer: If you are using a CEMS as your monitoring approach for SO_2, you may continue to use an SO_2 CEMS or you may use another method for determining SO_2 emissions for periods when you are only burning natural gas. The three methods that § 75.11(e) allows are:

(1) Under § 75.11(e)(2), you may certify a gas fuel flow meter and use the procedures in Appendix D to perform fuel sampling and analysis (see Section 2.3 of Appendix D). This option is available for either pipeline natural gas or other gaseous fuels.

(2) Under § 75.11(e)(1), you may determine heat input rate using a CO_2 or O_2 monitor and a flow monitor, then use a default SO_2 emission rate from Section 2.3.1.1 or Section 2.3.2.1.1 of Appendix D to convert to SO_2 emissions (see Section 7 of Appendix F). (Note that under this option, heat input rate may not be determined by gas sampling and analysis according to Section 5.5 of Appendix F.) This option is available only for fuels that qualify as either pipeline natural gas or natural gas (as defined in § 72.2).

To report heat input data using a CO_2 or O_2 monitor and a flow monitor, it is not necessary to define and certify a separate system to calculate heat input. The flow system and CO_2 system must be certified under Part 75 before using the flow or CO_2 data.

To report SO_2 data for pipeline natural gas or natural gas for these hours, report the SO_2 mass emissions in RT 310. Leave blank the value for unadjusted SO_2 mass emissions. The formula you should use to determine SO_2 emissions is Equation F-23 from Appendix F, Section 7:

$$E_h = ER \times HI$$

Where:

E_h = Hourly SO_2 mass emission rate, lb/hr.
ER = Default SO_2 emission rate, either 0.0006 for pipeline natural gas or calculated using Equation D-1h, for "natural gas."
HI = Hourly heat input rate (using bias-adjusted flow rate), mmBtu/hr.

This formula should be included in RT 520 of your monitoring plan, and identified as "F-23" in the formula code column.

For any hour in which this formula is used to calculate SO_2 mass emissions, do not report a RT 200. However, you must provide sufficient hourly data to support the heat input rate determination (i.e., report the stack gas flow rate in RT 220 and the diluent gas concentration, either in RTs 202 and 210 (if CO_2 concentration is used to calculate heat input rate) or in RT 211 (if heat input rate is calculated using O_2 concentration).

(3) Under § 75.11(e)(3) you may use the SO_2 monitor during the combustion of gaseous fuel. However, you must report a default value of 2.0 ppm SO_2 whenever very low sulfur gaseous fuel (as defined in § 72.2) is combusted and the bias-adjusted SO_2 hourly average value recorded by the CEMS is less than 2.0 ppm.

Periods when only gaseous fuel is burned are not used to determine the monitor data availability for SO_2 when using either method (1) or (2) described above. In addition, the standard SO_2 missing data procedures are used if the SO_2 CEMS will be used to report data. The standard missing data procedures are not used in periods when only gaseous fuel is being combusted when using either method (1) or (2) described above. Rather, if you are using a fuel flow meter to determine SO_2 emissions, use the missing data procedures outlined in Appendix D. If you are determining heat input rate by using a flow monitor and a CO_2 or O_2 monitor, use the specific missing data procedures for those parameters.

References: § 75.11(e), § 75.64; Appendix D, Section 2.3; Appendix F, Section 7

Key Words: Electronic report formats, Reporting, SO_2 monitoring

History: First published in March 1995, Update #5; revised July 1995, Update #6; revised March 1996, Update #8; revised in October 1999 Revised Manual

Question 2.7 RENUMBERED AS QUESTION 25.1

Question 2.8 RENUMBERED AS QUESTION 25.2

Question 2.9 RENUMBERED AS QUESTION 25.3

Question 2.10 RENUMBERED AS QUESTION 25.4

Question 2.11 RENUMBERED AS QUESTION 25.5

Question 2.12 RENUMBERED AS QUESTION 25.6

Question 2.13 RETIRED

Question 2.14 RETIRED

Question 2.15 RETIRED

Question 2.16

Topic: Use of Default SO_2 Value

Question: I have a coal-fired unit with certified SO_2 and flow monitoring systems. The unit occasionally fires gaseous fuel. According to § 75.11(e)(3)(iii), the DAHS must automatically substitute a 2.0 ppm default for hours when: (a) the unit is combusting gaseous fuel that meets the definition of "very low sulfur fuel" in § 72.2; and (b) the measured SO_2 concentration reading is less than 2.0 ppm. Does EPA require me to demonstrate that my gaseous fuel qualifies as very low sulfur fuel before I use the 2.0 ppm default value?

Answer: No demonstration is required. The definition of very low sulfur fuel in § 72.2 includes the following: "pipeline natural gas" (as defined in § 72.2), "natural gas" (as defined in § 72.2), and any other gaseous fuel which has 20 grains or less of total sulfur. If, based on a knowledge of the composition of the gaseous fuel being combusted (e.g., from contract specifications or historical fuel sampling information), you believe the fuel qualifies as very low sulfur fuel, report the 2.0 ppm default SO_2 concentration for gas-fired hours when the bias-adjusted SO_2 concentration is less than 2.0 ppm.

References: § 72.2, § 75.11(e)(3)(iii)

Key Words: SO_2 monitoring, Reporting

History: First published in March 2000, Update #12

SECTION 3
FLOW MONITORING

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Question 3.1 RETIRED

Question 3.2

Topic: Applicability

Question: Is a flue gas volumetric flow monitor required on a gas-fired or oil-fired unit?

Answer: A gas-fired unit or oil-fired unit subject to the Acid Rain Program does not need a flue gas volumetric flow monitor if the owner or operator reports SO_2 mass emissions using the procedures specified in Appendix D or uses the low mass emissions (LME) methodology in § 75.19. Gas-fired and oil-fired units subject to Subpart H also have options for monitoring NO_x mass that do not require flow CEMS. These are outlined in § 75.71.

References: § 75.11(d)(2), § 75.19, § 75.71; Appendix D

Key Words: Excepted methods, Flow monitoring

History: First published in Original March 1993 Policy Manual; revised in October 1999 Revised Manual

Question 3.3

Topic: Requirements for Dual Flow (X-Pattern Flow) Monitoring Systems

Question: A number of sources have installed two sets of flow monitors in a single stack and are reporting the average flow value as the unit flow on an hourly basis. This includes systems using x-pattern ultrasonic monitors, as well as systems using two differential pressure monitors.

How should these sources represent these monitors in the monitoring plan? How should they report flow data and calibration records?

Answer: In the monitoring plan, identify each separate flow monitor as a component in the primary flow system. If each monitor alone will be used as a redundant backup flow system, also define each redundant backup system containing a single flow monitor.

For example, a utility may install flow monitors Component 00A and Component 00B on a single stack. The average flow value of Component 00A and 00B is identified with primary System P01. Component 00A is also a component of

redundant backup System B01, and Component 00B is a component of redundant backup System B02.

When the primary system is used to report data, report one set of calibration and interference records for each flow monitor component of the primary system. Report the average hourly flow value in RT 220 using only the system ID. Leave the component ID blank. EPA will recognize the blank component ID as an indication that the system contains more than one flow monitor component and will evaluate the monitoring plan data for the multiple components and the calibration and interference check data for appropriate multiple QA records.

For certification purposes and ongoing quality assurance, compare the reference method results to the DAHS read out for each single flow monitor and the primary flow system comprised of the average of its two components. Report three sets of RATA and bias test data and results: one for system P01 (the average of components 00A and 00B), one for system B01, and one for system B02.

Conduct a 7-day calibration error test on each single flow monitor component. You must report the 7-day calibration error test data and results once for each backup system and again for each flow monitor component of the primary system. For example, you would report the 7-day calibration error test data and results for each flow monitor component of the primary system: 00A-P01, 00B-P01, and again for each of the two backup systems: 00A-B01, and 00B-B02. The flow quarterly leak check results would be handled in the same manner as the 7-day calibration error test.

On any particular day for which data is reported from a backup flow system, you must report the daily calibration error and interference check using the backup component ID and system ID. If both primary and backup flow systems are used in the same day, calibration error and interference check data and results should be reported once for each flow monitor component of the primary system (00A-P01 and 00B-P01) and again for the component of the backup system used (e.g., 00A-B01).

References: Appendix A

Key Words: Flow monitoring, Monitoring plan, Reporting

History: First published in March 1995, Update #5

Question 3.4

Topic: Length of Reference Method 2 Test Runs

Question: Must a Method 2 flow run be 30 to 60 minutes long?

Answer: No. Method 2 only requires a run to be long enough to obtain a stable reading at each traverse point. The EPA recommends that flow run times be consistent with the run time for a gas RATA run (21 minutes). Flow runs shorter than 21 minutes are acceptable, but runs must be at least 5 minutes long.

References: 40 CFR Part 60, Appendix A (RM 2); 40 CFR Part 75, Appendix A, Section 6.5.7

Key Words: Flow monitoring, Reference methods

History: First published in July 1995, Update #6; revised in October 1999 Revised Manual

Question 3.5

Topic: Flow Monitor Interference Check

Question: Must quarterly reports include daily interference check results for stack gas flow monitors, regardless of type of flow monitor?

Answer: Yes. Part 75, Appendix A, Section 2.2.2.2 details the interference check requirements for three types of flow monitors. The EPA has received questions specifically asking whether ultrasonic flow monitors must perform the interference check. For ultrasonic flow monitors, as well as thermal and differential pressure flow monitors, you must perform the daily interference check. For example, for an ultrasonic flow monitoring system you would record a daily (or more frequent) interference check pass in RT 231 based on a sensor that indicates that the transducer purge air is working correctly. Conversely, a fail would be recorded in the event that the transducer purge air is not working correctly.

References: Appendix A, Section 2.2.2.2

Key Words: Flow monitoring, QA/QC, Reporting

History: First published in July 1995, Update #6

Question 3.6 REVISED

Topic: Accuracy of Flow Monitoring and Reference Methods

Question: Are the SO_2 emissions data reported under the Acid Rain Program high due to inaccuracy in the reference method for volumetric flow (EPA Test Method 2)? If it is uncertain, what is EPA doing to resolve the issue?

Answer: The evidence amassed to date does not indicate a clearly consistent pattern. Claims of overestimation are counterbalanced by evidence of little or no overestimation. The results appear to be highly dependent on site-specific flow patterns, particularly whether the emission flow is axial, going straight out the stack, or off-axial (i.e., swirling out the stack).

In addition, many of the claims appear to be based on a comparison between flow rates derived from fuel factors and fuel sampling-based heat input and flow rates derived from continuous emission monitoring systems (CEMS) as required by Part 75. Concluding that SO_2 measurements are incorrect because the monitored flow rates are higher than the fuel-factor-derived flow rates is questionable.

The frequency of measurement (hourly) and quality assurance (daily) is generally much higher with the Acid Rain certified CEMS than with fuel sampling. Estimating flow over short periods of time from fuel factors and heat input also depends on a high degree of consistency in the fuel supply, which is rarely the case at coal-fired boilers.

In response to the concerns of the regulated community and because of the importance of accurate emission measurements for environmental protection, and for the effective operation of the SO_2 allowance market, EPA developed three new test methods (Reference Methods 2F, 2G, and 2H) for measuring volumetric flow. These new test methods were published in the Federal Register and became effective on July 13, 1999.

Method 2F measures the axial velocity, taking into account both the yaw and pitch angles, using a 3-dimensional probe, such as a prism-shaped, five-hole probe (commonly called a DA or DAT probe) or a five-hole spherical probe.

Method 2G is a variant of existing Method 2, which uses a Type S pitot tube or a 3-dimensional probe to determine the flue gas velocity in a stack or duct, taking into account the yaw angle of flow. Method 2G does not account for the pitch angle of flow.

In a stack or duct with flowing gas, the gas velocity will approach zero near the stack or duct wall. Method 2H can be used in conjunction with existing Method 2 or new Methods 2F or 2G to account for this velocity drop-off when determining volumetric flow rate.

Questions 3.13 through 3.23 and 3.26 through 3.37 in this manual provide implementation guidelines for the new flow methods. If additional questions arise concerning these new methods, EPA will add further questions and answers to Section 3, as appropriate.

References: 40 CFR Part 60, Appendix A (RMs 2, 2F, 2G, and 2H)

Key Words: Flow monitoring, Reference methods

History: First published in November 1995, Update #7; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 3.7 RETIRED

Question 3.8 REVISED

Topic: Interference Checks when Unit is Operating

Question: Must interference checks be performed when the unit is operating?

Answer: Yes. Appendix A, Section 2.2.2.2 requires the owner or operator of an affected unit to demonstrate non-interference from moisture, and to perform a daily test to detect pluggage and/or malfunction of each resistance temperature device (RTD), transceiver or equivalent. Flow monitors commonly employ a purge across the transceiver or out the sampling ports or periodic heating of RTDs to meet the above requirements. Because all of these are active measures utilizing mechanical/electrical devices, they may be susceptible to changes in temperature and pressure observed during unit operation. Therefore, the interference check should be performed during unit operation.

References: Appendix A, Section 2.2.2.2; Appendix B, Section 2.1.2

Key Words: Flow monitoring, QA/QC, Reporting

History: First published in November 1995, Update #7; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 3.9

Topic: Interference Checks on Differential Pressure Flow Monitors

Question: Must interference checks performed on differential pressure flow monitors be capable of detecting pluggage during a purge?

Answer: Part 75, Appendix A, Section 2.2.2.2 states in part: "Design and equip each flow monitor with a means to detect, on at least a daily basis, pluggage of each sample line and sensing port. . . ." Because differential pressure flow monitor purge cycles are generally performed at least daily, performing the interference check during the purge may make sense. Regardless of whether the interference check is performed during a purge, the interference check must be performed so that any pluggage is detected and reported at least daily. In practice, this means that if no pluggage of any sample line or sensing port is present, a passed interference check would be reported; if pluggage is present, a failed interference check would be reported. Also, please refer to Question 3.5.

References: Appendix A, Section 2.2.2.2

Key Words: Flow monitoring, QA/QC, Reporting

History: First published in November 1995, Update #7

Question 3.10 REVISED

Topic: Moisture Content Determination

Question: My pollutant concentration is measured on a dry basis and the flow rate is measured on a wet basis. Can I use the wet bulb-dry bulb technique to determine the moisture content of the stack gases?

Answer: It depends upon the use of the moisture data. The wet bulb-dry bulb technique may not be used when converting dry pollutant concentration to a wet basis for the calculation of pollutant emission rate. Either Reference Method 4 in Appendix A-3 of 40 CFR Part 60 or the approximation method described in Section 6.2 of Method 4 (midget impinger technique) must be used to convert gas concentrations from a dry to wet basis. A 1978 EPA field study has demonstrated that the midget impinger technique is capable of giving results within 1% H_2O of the reference method (see Reference 1 in the Bibliography of Reference Method 6A).

Method 4 allows the use of other approximation methods, such as the wet bulb-dry bulb technique to provide estimates of percent moisture to aid in setting isokinetic sampling rates prior to a pollutant emission measurement run. For the

Part 75 Program, you may use the wet bulb-dry bulb technique when determining the molecular weight of the stack gas for the purpose of calculating the stack gas volumetric flow rate.

References: 40 CFR Part 60, Appendix A-3 (RM 4)

Key Words: Flow monitoring, Reference methods

History: First published in March 1996, Update #8; revised in October 2003 Revised Manual

Question 3.11 RENUMBERED AS QUESTION 25.7

Question 3.12

Topic: Re-linearization of Flow Monitor During Pre-RATA Testing

Question: If a flow monitor is re-characterized or re-linearized during pre-RATA testing, do we need to use missing data for flow between the time the flow monitor was re-characterized and the time it passes the RATA?

Answer: Not necessarily. According to Section 2.3.2(b)(3) of Appendix B, you have two data validation options following a major adjustment or re-linearization of a flow monitor: (1) invalidate all data from the monitor from the hour of the re-linearization of the instrument until a subsequent hands-off RATA is passed; or (2) invalidate data from the monitor from the hour of the re-linearization of the instrument until a subsequent probationary calibration error test is passed and then use the conditional data validation procedures of § 75.20(b)(3). When the second option is chosen, if the subsequent RATA is passed hands-off, data from the monitor are considered quality-assured, back to the time of completion of the probationary calibration error test.

References: § 75.20(b)(3); Appendix B, Section 2.3.2(b)(3)

Key Words: Flow monitoring, Diagnostic testing, RATAs

History: First published in October 1999 Revised Manual

Question 3.13 REVISED

Topic: Test Methods 2F, 2G, and 2H -- Application

Question: How do I implement Test Methods 2F, 2G, and 2H? In particular, what adjustments can be made to the flow monitor in preparation for performing a RATA using Methods 2F, 2G, and 2H?

Answer: The recommended procedures for implementing these flow rate methods are as follows:

(1) First, decide which flow reference method or combination of methods will be implemented (e.g., Methods 2 and 2H with a default wall adjustment factor (WAF), Methods 2F and 2H with a calculated WAF, etc.).

(2) Second, perform whatever diagnostic testing and wall effects measurements are necessary to establish new parameter values or to adjust existing parameter values that will be programmed into the flow monitor to make the monitor readings agree with the selected reference method(s). (This process is analogous to the set-up or characterization of the flow monitor that was done prior to initial certification, to make the monitor readings agree with Method 2.) If Method 2F or 2G is selected as a reference method, establish the new parameter values or parameter value adjustments at three load or operating levels (low, mid, and high). If Method 2H will be used to obtain calculated WAFs, characterize separate WAFs at each of the three load or operating levels. If Method 2H is used with a default WAF, no wall effects measurements are needed. In that case, apply a constant parameter adjustment of either 0.5% or 1.0% (as appropriate to the type of stack) at each load or operating level.

(3) Third, incorporate the new parameter values or parameter value adjustments, determined in the second step, above, into the flow monitor and then perform a follow-up 3-load (or 3-level) RATA using the selected reference method(s). For the follow-up RATA, use the data validation procedures in Section 2.3.2 of Appendix B (note especially paragraph (b)(3)).

(Note: The procedures described above are recommended, not required, because EPA recognizes that there may be situations in which the owner or operator desires to use the new flow rate methods for reference method testing without making any adjustments to the polynomial coefficients or K-factor(s) of the flow monitor. For example, if a particular flow monitor installed on a brick stack was originally characterized or set up using regular Method 2, and if the monitor has a 1% bias adjustment factor (BAF) with respect to Method 2, the owner or operator may elect to perform the next RATA of the flow monitor cold (i.e., without changing any coefficients or K-factors) and to use a combination of regular Method 2 and Method 2H (using the 1% default wall effects adjustment factor allowed under Method 2H) to try to eliminate the BAF.)

References: 40 CFR Part 60, Appendix A (RMs 2, 2F, 2G, and 2H); 40 CFR Part 75, Appendix B, Sections) 2.3.2(b)(1), 2.3.2(b)(2) and 2.3.2(b)(3)

Key Words: Certification tests, Diagnostic testing, Flow monitoring, Recertification, Relative accuracy

History: First published in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 3.14 REVISED

Topic: Test Method 2H -- Applying the Default Wall Effects Adjustment Factor (WAF)

Question: Can I apply the default WAF to data reported by my flow monitor?

Answer: The WAF is applied only to the reference method value obtained by Method 2, 2F, or 2G in the RATA, not to the values reported by the flow monitor. However, immediately before performing this RATA, new parameter values or parameter value adjustments may be programmed into the flow monitor to make the flow monitor readings agree with the selected reference method(s). See Question 3.13 for a more detailed discussion of these adjustments.

References: 40 CFR Part 60, Appendix A-2 (RM 2H); 40 CFR Part 75, Appendix B, Sections 2.3.2(b)(1), 2.3.2(b)(2) and 2.3.2(b)(3)

Key Words: Certification tests, Diagnostic testing, Flow monitoring, Recertification, Relative accuracy

History: First published in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 3.15

Topic: Test Method 2H -- Minimum Acceptable Calculated Wall Effects Adjustment Factor (WAF)

Question: If I calculate the WAF based on a Method 1 traverse consisting of more than 16 traverse points, do the minimum acceptable wall effects adjustment factors of 0.9800 for a partial traverse and 0.9700 for a complete traverse still apply?

Answer: Yes. These limits always apply. The likely results of using more than 16 Method 1 traverse points are twofold: (1) a lower average velocity and (2) a WAF that is greater than or equal to 0.9800 for a partial traverse and 0.9700 for a complete traverse.

References: 40 CFR Part 60, Appendix A-2 (RM 2H, Section 12.6)

Key Words: Certification tests, Diagnostic testing, Flow monitoring, Recertification, Relative accuracy

History: First published in October 1999 Revised Manual

Question 3.16

Topic: Test Method 2H -- Frequency of Performing Wall Effects Testing

Question: If I want to use a calculated wall effects adjustment factor (WAF) to account for velocity decay near the stack or duct wall, how frequently does Test Method 2H need to be performed? May I use the WAF from last year's annual flow RATA?

Answer: Perform Method 2H and recalculate the WAF every time a flow monitor relative accuracy test audit is performed. You may not use a calculated WAF from a previous flow RATA.

References: 40 CFR Part 60, Appendix A-2 (RM 2H, Section 12.7.2); 40 CFR Part 75, Appendix B, Section 2.3.1.1

Key Words: Certification tests, Diagnostic testing, Flow monitoring, Recertification, Relative accuracy

History: First published in October 1999 Revised Manual

Question 3.17 REVISED

Topic: Test Method 2H -- Wall Effects Adjustment Factors (WAFs) and Load or Operating Levels

Question: When performing Method 2H, can I obtain a calculated wall effects adjustment factor at one load or operating level and apply it to all load or operating levels of a multi-level RATA?

Answer: No. A calculated wall effects adjustment factor can only be applied at the load level at which it was obtained. At other load levels you must either take

measurements to derive a separate calculated WAF for that load level or use the default WAF applicable for your particular stack or duct.

References: 40 CFR Part 60, Appendix A-2 (RM 2H, Section 12.7.2)

Key Words: Certification tests, Flow monitoring, Recertification, Relative accuracy

History: First published in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 3.18

Topic: Test Method 2H -- Discarding Wall Effects Adjustment Factors (WAFs)

Question: If I perform Method 2H and obtain a calculated WAF, must I use it?

Answer: Even after performing Method 2H, you are free to decide not to make use of the resulting calculated WAF. However, unless you can document technical reasons for invalidating a specific calculated WAF, you cannot discard one calculated WAF and use another calculated WAF in its place. If any calculated WAF is applied, it must be derived from all the calculated WAFs that were obtained using Method 2H.

For example, suppose a 9-run RATA is performed using Method 2G, and Method 2H is used to obtain calculated WAFs on Runs 1, 3, and 6. You are free to decide not to apply any calculated WAF to the Method 2G flow values. However, if a calculated WAF is applied to these flow values, it must be the arithmetic average of all three calculated WAFs obtained using Method 2H.

References: 40 CFR Part 60, Appendix A-2 (RM 2H, Section 12.7.2)

Key Words: Certification tests, Flow monitoring, Recertification, Relative accuracy

History: First published in October 1999 Revised Manual

Question 3.19

Topic: Test Method 2, 2F, 2G, and 2H -- Determining Wall Effects Adjustment Factors (WAFs) as Part of the RATA

Question: Must I determine my calculated wall effects adjustment factor (WAF) from measurements taken during one or more runs of the same RATA to which the resulting WAF will be applied?

Answer: Yes. Section 12.7.2 of Test Method 2H requires that a WAF that is applied to runs in a RATA must be obtained from wall effects measurements performed during one or more runs in that RATA. It should be noted that to be considered part of the same RATA, the runs in which the WAF measurements were made must have been completed within the RATA time period requirements in Part 75, Appendix A, Section 6.5(e). Similarly, for single run tests, Section 12.7.1 of Test Method 2H requires that any wall effects measurements must be obtained during the same traverse in which the unadjusted velocity for the WAF calculation was obtained.

References: § 75.22; 40 CFR Part 60, Appendix A-2 (RM 2H)

Key Words: Certification tests, Diagnostic Testing, Flow monitoring, Recertification, Relative accuracy

History: First published in October 1999 Revised Manual

Question 3.20 REVISED

Topic: Test Method 2, 2F, and 2G -- Using Different Test Methods at Different Load or Operating Levels

Question: Do I need to use the same flow test method (Test Method 2, 2F, or 2G) at each load or operating level of a multi- level relative accuracy test audit?

Answer: No. You may use different flow test methods at different load or operating levels (e.g., Method 2F at high load and Method 2 at low and mid load). However, the same flow test method must be used for each run within a particular load or operating level. In the example presented above, all runs at the high load level would have to be performed using Method 2F and all runs at the mid and low load levels would have to be performed using Method 2.

References: 40 CFR Part 60, Appendix A-2 (RMs 2, 2F, and 2G); 40 CFR Part 75, Appendix B, Section 2.3.1.3.

Key Words: Certification tests, Diagnostic Testing, Flow monitoring, Recertification, Relative accuracy

History: First published in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 3.21

Topic: Test Method 2H -- Applicability of Notes Regarding Stack Diameters in Sections 8.2.3(b) and 8.2.3(c)

Question: Do the stack diameters given in the notes in Sections 8.2.3(b) and 8.2.3(c) of Method 2H hold for Method 1 traverses with more than 16 traverse points?

Answer: No. The dimensions shown in these sections only apply to a Method 1 traverse consisting of 16 points.

Section 8.2.3(b) says that for stacks or ducts with diameters greater than 15.6 feet, the interior edge of the Method 1 equal area is farther from the wall than 12 inches (i.e., d_b is greater than 12 inches). Section 8.2.3(c) says that for a complete wall effects traverse the distance between d_{rem} and d_{last} will be less than or equal to ½ inch for stacks or ducts with diameters less than 16.5 feet. These conditions apply to Method 1 traverses consisting of 16 traverse points. Other dimensions would apply to Method 1 traverses consisting of more than 16 traverse points.

References: 40 CFR Part 60, Appendix A-2 (RM 2H, Sections 8.2.3(b) and 8.2.3(c))

Key Words: Certification tests, Diagnostic Testing, Flow monitoring, Recertification, Relative accuracy

History: First published in October 1999 Revised Manual

Question 3.22

Topic: Test Method 2H -- Typographical Error in Headers of Columns D and E of Form 2H-2

Question: Is there an error in the headers of columns D and E in Form 2H-2, the form used to calculate wall effects replacement velocity values when performing a Method 1 traverse consisting of 16 or more traverse points? The algebraic expressions in the column headers do not agree with the instructions appearing in Section 12.4.2 and Equation 2H-8 of Method 2H.

Answer: Yes. There is a typographical error in these column headers. The multiplier in the algebraic expressions should be 1/4, not 2/p. The expression above column D should be

$$\frac{1}{4}\pi[r-d+1]^2$$

and the expression above column E should be

$$\frac{1}{4}\pi[r-d]^2$$

References: 40 CFR Part 60, Appendix A-2 (RM 2H)

Key Words: Certification tests, Diagnostic Testing, Flow monitoring, Recertification, Relative accuracy

History: First published in October 1999 Revised Manual

Question 3.23

Topic: Test Method 2H -- Using Default Wall Effects Adjustment Factor (WAF) After Deriving a Calculated WAF

Question: After taking wall effects measurements and obtaining a calculated WAF may I use the appropriate default WAF instead of the calculated WAF I obtained?

Answer: Yes. You may use the appropriate default WAF instead of the calculated WAF, but you must report both the calculated and default WAFs, as follows:

(1) When using Method 2F or 2G, in EDR v2.1/2.2 report the calculated WAF in column 109 of RT 614. Leave RT 614/115 blank (since you have elected not to use the calculated WAF), and report the default WAF in column 121 of RT 614; or

(2) When regular Method 2 is used and you elect to apply a default WAF instead of using the calculated WAF, report RT 616 to indicate which default WAF value has been applied to the RATA runs. Do not report any RTs 614 or 615 when using regular Method 2 with a default WAF, as these record types are incompatible with the reference method code "D2H" in column 23 of RT 611. Instead, report all calculated WAFs that were not used in the flow calculations in EDR RT 910 (the electronic cover letter transmitting the quarterly report). Also indicate in RT 910 how many wall effects measurement points were tested at each sample port to derive each calculated WAF.

References: § 75.59, § 75.64; 40 CFR Part 60, Appendix A-2 (RM 2H)

Key Words: Certification tests, Diagnostic Testing, Flow monitoring, Recertification, Relative accuracy

History: First published in October 1999 Revised Manual; revised in December 2000, Update #13

Question 3.24 REVISED

Topic: Stack Flow-to-load Test

Question: Please provide more details about the quarterly stack flow-to-load ratio test. A comparison of hourly flow-to-load assumes that they are related, but that is not always true.

Answer: During the rulemaking process, EPA had extensive discussions with utility representatives concerning the flow-to-load ratio test and incorporated many of their suggestions into the May 26, 1999 final rule. One concern raised by the utilities was whether a straight flow-to-load ratio is a sufficiently reliable indicator of flow monitor performance. To address this concern, the final rule allows an alternative to the straight flow-to-load comparison. The quarterly flow rate data may instead be analyzed using the gross heat rate (GHR), which includes a correction for the diluent gas concentration. In many instances, using the GHR appears to be a more satisfactory way of evaluating the data, especially for common stacks. Also note that the tolerance band for the flow-to-load ratio or GHR test is rather wide. For a further discussion of the rationale behind the flow-to-load ratio test, see the preamble to the May 21, 1998 proposed revisions to Part 75 (63 FR 28061).

References: Appendix B, Section 2.2.5

Key Words: Flow-to-load test

History: First published in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 3.25

Topic: Hourly Averages for Abbreviated Flow-to-load Test

Question: An abbreviated flow-to-load ratio diagnostic test is performed for a non-peaking unit using 6 to 12 consecutive hourly average flow rates. What kind of hourly averages are these? Is the answer the same for a peaking unit (using 3 to 12 hours)?

Answer: These hourly average flow rates are the ones required under § 75.10(d)(1), and are calculated in the same way for peaking and non-peaking units.

References: § 75.10(d)(1); Appendix B, Section 2.2.5.3

Key Words: Flow-to-load test, Peaking unit

History: First published in October 1999 Revised Manual

Question 3.26

Topic: Test Method 2H -- Restrictions on Use of Default Wall Effects Adjustment Factors (WAFs)

Question: Can the default WAF specified in Section 8.1 of Method 2H be applied to the average velocity unadjusted for wall effects obtained from a Method 1 traverse regardless of the number of points in the Method 1 traverse?

Answer: The default WAF may only be applied to the average velocity unadjusted for wall effects obtained from a Method 1 traverse consisting of 12 or 16 traverse points. A default WAF may not be applied to the average velocity obtained from a Method 1 traverse consisting of more than 16 traverse points.

The default WAF values specified in Method 2H (i.e., 0.9900 for brick and mortar stacks and 0.9950 for all other types of stacks) were derived based on field data from 16-point Method 1 traverses. Consistent with the provisions of section 12.7.2, these default WAFs may be applied to the average velocity unadjusted for wall effects "obtained from runs in which the number of Method 1 traverse points sampled does not exceed the number of traverse points in the runs used to derive the wall effects adjustment factor." That is, the default WAF may be used with Method 1 traverses consisting of 12 or 16 points, but not with Method 1 traverses consisting of more than 16 points.

Without this restriction, velocity decay would be double-counted in traverses consisting of more than 16 points (once in the additional Method 1 traverse points close to the wall and then again when the default wall effects adjustment factor is applied to the results of the Method 1 traverse).

References: 40 CFR Part 60, Appendix A-2, Method 2H, Sections 8.1 and 12.7.2

Key Words: Certification tests, Diagnostic testing, Flow monitoring, Recertification, Relative accuracy

History: First published in March 2000, Update #12

Question 3.27 REVISED

Topic: Test Method 2H -- Qualification for Default Value

Question: For use of the default wall effects adjustment factor (WAF) values under Method 2H, do we have to do anything to qualify?

Answer: No, just report the default WAF value in EDR v2.1/2.2, and if you are using the 0.9900 default value, declare that you have a brick or mortar stack.

References: 40 CFR Part 60, Appendix A-2, Method 2H

Key Words: Flow monitoring, RATA, Wall effects adjustment factor

History: First published in March 2000, Update #12; revised in October 2003 Revised Manual

Question 3.28 REVISED

Topic: Test Method 2H -- Gunite Stack

Question: To use the 0.9900 default wall effects adjustment factor (WAF) value in Method 2H, does the entire stack have to be brick or mortar or just the lining? What about gunite?

Answer: To use the 0.9900 default WAF, the stack lining must be brick or mortar. Gunite is not considered to be brick or mortar.

References: 40 CFR Part 60, Appendix A-2, Method 2H

Key Words: Flow monitoring, RATA, Wall effects adjustment factor

History: First published in March 2000, Update #12

Question 3.29

Topic: Use of Spherical Probes for Flow Test Methods

Question: What is the advantage of using the spherical probe for the new flow methods?

Answer: In low pitch angle applications, a spherical probe may be easier to read than a DA or DAT probe. This is likely to be less of a consideration, however, if an

electronic manometer is used to read the pitch angle pressure, as recommended in Section 6.4 of Method 2F.

References: N/A

Key Words: Flow monitoring, RATA

History: First published in March 2000, Update #12

Question 3.30 REVISED

Topic: Calibration of Probe

Question: If, under Method 2F or 2G, we calibrate a probe in a wind tunnel at 60 and 90 fps, can we use it at any velocity?

Answer: When using a 3-D probe (i.e., DA, DAT, or spherical) either under Method 2F or in yaw-determination mode under Method 2G, you may use the probe at any average velocity greater than or equal to 20 fps if it has been calibrated at 60 and 90 fps. That is, a 3-D probe may not be used under Method 2F or 2G if the average velocity is less than 20 fps.

Under Method 2G, if you calibrate a Type S probe at 60 and 90 fps, you may use the probe at any average velocity greater than or equal to 30 fps. A Type S probe under Method 2G may be used at average velocities less than 30 fps, but only if one of the two velocity settings used when calibrating the probe is less than or equal to the average velocity encountered in the field. This must be verified in accordance with the procedures specified in Section 12.4 of Method 2G. Also, the QA/QC requirements in Sections 10.6.12 through 10.6.14 of Method 2G for calibration coefficients must be met at the chosen calibration velocity settings.

References: 40 CFR Part 60, Appendix A-2, Methods 2F and 2G

Key Words: Flow monitoring, RATA

History: First published in March 2000, Update #12; revised in October 2003 Revised Manual

Question 3.31 REVISED

Topic: Use of 3D Probe for Methods 2F and 2H

Question: If we use a 3D probe for Method 2F, must we use a 3D probe for the WAF measurements under Method 2H?

Answer: No. You may, for example, use a Type-S pitot tube to measure the wall effects.

References: 40 CFR Part 60, Appendix A, Methods 2F and 2H

Key Words: Flow monitoring, RATA, Wall effects adjustment factor

History: First published in March 2000, Update #12; revised in October 2003 Revised Manual

Question 3.32

Topic: Use of WAF for Square and Rectangular Stacks

Question: Are there any plans to expand the use of the WAF to square and rectangular stacks or ducts? Why can't we just use a default value?

Answer: EPA will investigate this if budget resources allow. Neither a measured nor a default WAF value may be used until the effects near the wall in a square or rectangular stack or duct have been properly studied by EPA.

References: 40 CFR Part 60, Appendix A-2, Method 2H

Key Words: Flow monitoring, RATA, Wall effects adjustment factor

History: First published in March 2000, Update #12

Question 3.33 REVISED

Topic: Test Method 2H -- Traverse Points

Question: How many Method 1 traverse points must we use when a calculated wall effects adjustment factor (WAF) is determined using Method 2H?

Answer: You must perform a Method 1 velocity traverse of at least 16 points for each run used in the calculation of the WAF.

References: 40 CFR Part 60, Appendix A-2, Method 2H, sections 3.16, 8.2.

Key Words: Flow monitoring, RATA, Wall effects adjustment factor

History: First published in March 2000, Update #12; revised in October 2003 Revised Manual

Question 3.34 REVISED

Topic: Minimum WAF

Question: Under Method 2H, what if a source finds that it is getting a calculated wall effects adjustment factor (WAF) less than 0.9700 (i.e., more than a 3% reduction in the velocity calculated without Method 2H)? Can you do more than sixteen Method 1 traverse points and use a WAF value of less than 0.9700?

Answer: You may use more than sixteen Method 1 traverse points when a Method 2H calculated WAF is used. However, no matter how many Method 1 traverse points are used, you may not apply a calculated WAF that is less than 0.9700 for a complete wall effects traverse or 0.9800 for a partial wall effects traverse to the runs of a flow RATA.

It should be noted, however, that the actual calculated value of the WAF is reported in column 109 of RT 614.

For example, suppose that for a particular RATA run, you calculate a WAF of 0.9600, based on a complete wall effects traverse. You would report this measured WAF in column 109 of RT 614. However, you could not apply the WAF of 0.9600 to the runs of the RATA, because when a complete wall effects traverse is performed, the lowest WAF that you are allowed to use is 0.9700. Report the actual WAF applied to the RATA runs (in this case, 0.9700) in column 115 of RT 614.

Also see Policy Question 3.15.

References: 40 CFR Part 60, Appendix A-2, Method 2H

Key Words: Flow monitoring, RATA, Wall effects adjustment factor

History: First published in March 2000, Update #12; revised in October 2003 Revised Manual

Question 3.35

Topic: Test Methods 2 and 2H

Question: Isn't the wall effects adjustment factor (WAF) derived in Method 2H within the error band of Method 2?

Answer: By applying the WAF allowed by Method 2H, you are reducing potential systematic error that may result under Method 2 if velocity decay at the wall is not taken into account. The error band about the mean measured stack gas velocity characterizes the random error in Method 2 and is unrelated to the systematic error addressed by the WAF.

References: 40 CFR Part 60, Appendix A, Methods 2 and 2H

Key Words: Flow monitoring, RATA, Wall effects adjustment factor

History: First published in March 2000, Update #12

Question 3.36 REVISED

Topic: Flow Measurement in Rectangular Stacks or Ducts

Question: If I use Method 2F to perform a flow RATA in a rectangular stack or duct, Part 75 requires me to report EDR RT 614 to support each RATA run. Columns 86 and 91 of RT 614 require reporting of the stack diameter and the stack or duct cross-sectional area at the test port location. How do I satisfy these reporting requirements for a rectangular duct?

Answer: For a rectangular stack or duct, the cross-sectional area reported in RT 614, column 91 is simply the product of the stack or duct length times the width. To determine the appropriate diameter to report in column 86 of RT 614, use the following equation:

$$Ds = \sqrt{\frac{4\,As}{\pi}}$$

Where:
Ds = Equivalent circular stack diameter (ft)
As = Area of the rectangular duct (ft^2)

Note that you should not use the equation in section 12.2 of EPA Method 1 to determine the "equivalent diameter" of the rectangular stack or duct. The Method

1 equation should only be used for its intended purpose, which is to estimate the number of stack or duct diameters upstream and downstream of the measurement location, in order to determine the minimum number of Method 1 points for the velocity traverse.

References: 40 CFR 60, Appendix A-2, Methods 1, 2, 2F, and 2G

Key Words: Equivalent diameter, Flow monitoring, Rectangular ducts

History: First published in December 2000, Update #13; revised in October 2003 Revised Manual

Question 3.37 REVISED

Topic: Reporting of EDR Record Types 614, 615, and 616

Question: Please clarify the reporting requirements for the new flow RATA support records (EDR RTs 614, 615, and 616).

Answer: First, note that RTs 610 and 611 are required for all flow RATAs, whether the tests are done for initial certification, recertification, or on-going quality assurance. However, the flow RATA support records (i.e., RTs 614, 615, and 616) are required to be reported only as follows:

(1) When Method 2 is used for the RATA:

Do not report any RTs 614, 615, or 616.

(2) When Methods 2 and 2H (Default WAF) are used:

When regular Method 2 is used for the flow RATA and you elect to apply a default WAF to all runs of the RATA (as allowed by Method 2H), report a RT 616, indicating the default WAF value applied. For example, if you perform a 3-load flow RATA using Method 2 and apply the default WAF at all load levels, report a total of 3 RTs 616, one per load level.

(3) When Methods 2 2H (Measured WAF) are used:

When regular Method 2 is used for the flow RATA and a WAF is measured with Method 2H, report RTs 614 and 615 only for RATA runs in which Method 2H is used to derive a calculated WAF from the run data and the run is used in the relative accuracy calculations. Do not report RTs 614 and 615 for the RATA runs which do not measure wall effects.

For example, suppose that you use Method 2 to perform a 3-load flow RATA and make wall effects measurements during one run per load level using Method 2H (with 16 Method 1 velocity traverse points for each wall effects run). Suppose further that you use all of the RATA runs in the relative accuracy calculations and decide to apply the calculated WAF values at the mid and high load levels, but to use a default WAF at the low load level. In this case, you would report only two run-level 614 records, one each for the mid-level and high-level runs at which a WAF was determined by measuring the wall effects and 32 point-level 615 records, 16 for each of these same two runs. In this case, you would not report any RTs 614 or 615 for the low load level, since you have elected to apply a default WAF at that level -- rather, you would report RT 616 for the low load level (see (2), above).

(4) When Method 2F or 2G is used:

Report RTs 614 and 615 whenever Method 2F or 2G is used for the flow RATA. One RT 614 is required for each RATA run that is used in the relative accuracy calculations (i.e., each run with a status flag of "1" in column 62 of RT 610), and one RT 615 is required for each Method 1 traverse point in each of these runs.

For example, if Method 2F is used for a 3-load flow RATA and if 12 runs are performed at each load level, using 16 traverse points per run, but only 9 of the 12 runs at each level are used in the relative accuracy calculations, you would report a total of 27 run-level 614 records (9 runs/load level X 1 RT 614/run X 3 load levels) and 432 point-level 615 records (16 points/run X 1 RT 615/point X 9 runs/load level X 3 load levels).

(5) The following Table summarizes the RT 614, 615, and 616 reporting requirements:

SUMMARY OF EDR RECORD TYPE 614, 615, and 616 REPORTING REQUIREMENTS

Case No.	Case Description	Reference Method(s) Used	Reference Method Code (RT 611:23)	Required EDR Record Types		
				610/611	614/615[1]	616
1	Method 2, with no wall effects adjustments	2	2	Y	N	N
2	Method 2 with default WAF	2 and 2H	D2H	Y	N	Y
3	Method 2 with calculated WAF	2 and 2H	M2H	Y	Y[2]	N
4	Method 2F, with no wall effects adjustments	2F	2F	Y	Y	N

SUMMARY OF EDR RECORD TYPE 614, 615, and 616 REPORTING REQUIREMENTS (cont.)

Case No.	Case Description	Reference Method(s) Used	Reference Method Code (RT 611:23)	Required EDR Record Types		
				610/611	614/615[1]	616
5	Method 2F with calculated or default WAF	2F and 2H	2FH	Y	Y	N
6	Method 2G, with no wall effects adjustments	2G	2G	Y	Y	N
7	Method 2G with calculated or default WAF	2F and 2H	2GH	Y	Y	N

[1] When RTs 614 and 615 are required, report them only for RATA runs that are used in the relative accuracy calculations (when run status flag in RT 610:62 = "1").

[2] For reference method code "M2H," report RTs 614 and 615 for a particular RATA run only if the run is both: used in the relative accuracy calculations (if run status flag in RT 610:62 = "1") and used to derive a calculated WAF.

References: 40 CFR Part 60, Appendix A-2, Methods 2, 2F, 2G, and 2H; EDR Version 2.1/2.2 Reporting Instructions

Key Words: EDR v. 2.1/2.2, Flow monitoring, RATAs, Methods 2, 2F, 2G, and 2H, Reporting

History: First published in December 2000, Update #13; revised in October 2003 Revised Manual

Question 3.38 REVISED

Topic: Flow-to-load Ratio Test -- Multiple Stacks

Question: How do I report the reference flow-to-load ratio or gross heat rate (GHR) in EDR RT 605 for a unit with a multiple stack (or duct) exhaust configuration?

Answer: For each monitoring system installed on each of the multiple stacks (or ducts), submit a separate EDR RT 605. Report the reference flow-to-load ratio or GHR value in column 44 or 57 (as applicable) of each RT 605.

A reference flow-to-load ratio may either be determined separately for each stack (i.e., using the ratio of the flow through the stack to the unit load), or a single

reference ratio may be determined on a combined basis (i.e., using the ratio of the combined flow through all stacks to the unit load).

Note that when the flow-to-load ratio is determined on a combined basis, the reference ratio or GHR value will be *the same* in each RT 605. For further guidance, see the latest version of the Revised EDR Version 2.1/2.2 Reporting Instructions, specifically, the field descriptions and instructions for RT 605.

References: Appendix A, Section 7.7; Revised EDR Version 2.1/2.2 Reporting Instructions

Key Words: Flow-to-load test, GHR, Multiple Stacks, Reporting

History: First published in December 2000, Update #13; revised in October 2003 Revised Manual

Question 3.39 REVISED

Topic: Flow-to-load Ratio Test -- Multiple Stacks

Question: For a unit with a multiple stack configuration, if primary flow monitors (but no redundant backup monitors) are installed on each stack, please clarify how to perform the data analysis and report the test results for the quarterly flow-to-load ratio or gross heat rate (GHR) test.

Answer: For a multiple stack configuration, Section 2.2.5(a) in Appendix B to Part 75 allows the flow-to-load ratio or GHR test to either be done on a combined basis or on an individual stack basis. Perform the test and report the results in the following way:

(1) Identify all of the candidate hours for the flow-to-load analysis (all hours in the quarter for which the unit load was within 10% of L_{avg}, the average load during the last normal load flow RATA (if the flow-to-load analysis is done on an individual stack basis) or RATAs (if the flow-to-load analysis is done on a combined basis). For a more complete explanation of how to determine L_{avg} when the flow-to-load analysis is done on a combined basis, see the Revised EDR Version 2.1/2.2 Reporting Instructions, specifically the field descriptions instructions for RT 605, column 34.

(2) Select from among the hours identified in (1), all hours in which a quality-assured flow rate value was obtained and recorded (in EDR RT 220) at the stack (if the analysis is done on individual stack basis) or at all of the multiple stacks (if the analysis is done on a combined basis). Call this number of hours "n."

(3) If $n < 168$, then there is not enough data for the combined flow-to-load test and you should report "N" in RT 606, column 25, as the test result for all

monitoring systems. If $n \geq 168$, you may either analyze all of the data or claim the allowable exclusions (see Appendix B, Section 2.2.5(c)) and then analyze the remaining data. If you claim exclusions and there are < 168 hours of data remaining after the exclusions, report "E" as the test result for all monitoring systems. If you choose not to claim exclusions or if you have at least 168 hrs of valid data remaining after claiming allowable exclusions, proceed to step (4).

(4) Perform the flow-to-load analysis as follows.

(a) If the analysis is done on an individual stack basis:

- For each candidate hour that was not excluded under (3), above, use the hourly flow rates and the corresponding hourly unit loads, in conjunction with the reference flow-to-load ratio and Equations B-1 and B-2 in Appendix B, to calculate E_f, the average percentage deviation of the hourly ratios from the reference ratio.

(b) If the analysis is done on a combined basis:

- For each candidate hour that was not excluded under (3), above, determine the combined flow rate by adding together the individual hourly stack flow rates.

- Combine the hourly flow rates together on a consistent basis throughout the quarter (i.e., combine the bias-adjusted stack flow rates or the unadjusted flow rates for each hour).

- Use the combined hourly flow rates and the corresponding hourly unit loads, in conjunction with the reference flow-to-load ratio and Equations B-1 and B-2 in Appendix B, to calculate E_f, the average percentage deviation of the hourly ratios from the reference ratio.

(5) If the flow-to-load ratio test is done on a combined basis, you will obtain only a single flow-to-load test result for the multiple stack configuration. Therefore, in this case, you must report the test result multiple times in EDR RT 606 (once under each flow monitoring system ID associated with each of the multiple stacks).

(6) If you elect to use the gross heat rate (GHR) option instead of the flow-to-load ratio, you would use hourly unit heat input rates (from column 36 of the unit-level RTs 300) instead of hourly flow rates, use the reference GHR value instead of the reference flow-to-load ratio, and use Equation B-1a instead of Equation B-1 in the data analysis.

References: Appendix B, Sections 2.2.5(a)(1) and 2.2.5(a)(3); Revised EDR Version 2.1/2.2 Reporting Instructions

Key Words: Flow-to-load test, GHR, Multiple stacks, Reporting

History: First published in December 2000, Update #13; revised in October 2003 Revised Manual

Question 3.40 REVISED

Topic: Flow-to-load Ratio Test -- Multiple Stacks

Question: For a multiple stack configuration, if both primary and redundant backup flow monitors are installed on each stack, how do I perform and report the results of the quarterly flow-to-load ratio or GHR test?

Answer: For purposes of illustration, assume that the unit has two stacks (A and B). Stack A has a primary flow monitor (A_p) and a backup flow monitor (A_b). Stack B has a primary flow monitor (B_p) and a backup flow monitor (B_b). To meet the flow-to-load or GHR test requirements, submit separate RTs 605 and 606 for each primary and each redundant backup flow monitoring system, as follows:

(1) The reference information in the RTs 605 for the stack A monitoring systems (A_p and A_b) and for the stack B systems (B_p and B_b) will, of course, be different if the data analysis is done on an individual stack basis. However, the reference information will be *the same* in the RTs 605 for stacks A and B if the reference flow-to-load ratio or GHR is derived on a combined basis, using data from the most recent normal load flow RATAs at the individual stacks.

(2) Perform the flow-to-load or GHR data analysis either on an individual stack basis or on a combined basis (as described in Policy Question 3.39).

- If the analysis is done on an individual stack basis, perform separate flow-to-load or GHR evaluations of the primary and backup monitoring systems on each stack (e.g., A_p and A_b).

- However, if the analysis is done on a combined basis, separate analyses of the individual primary and backup monitoring systems is not feasible, since the primary system may be in use at stack A while the backup system is in service on stack B (or vice-versa). Therefore, when the analysis is done on a combined basis, you will only obtain a single flow-to-load or GHR test result. Apply this one test result to *all* of the primary and backup monitoring systems on both stacks, with one exception: if *none* of the data used in the quarterly flow-to-load data analysis was generated by a particular monitoring system (e.g., if none of the data used in the analysis came from backup monitor B_b), report a result of "N" in RT 606 for that monitoring system.

References: Appendix B, Section 2.2.5; Revised EDR Version 2.1/2.2 Reporting Instructions

Key Words: Flow-to-load test, GHR, Multiple stacks, Reporting

History: First published in December 2000, Update #13; revised in October 2003 Revised Manual

Question 3.41 REVISED

Topic: Flow-to-load Ratio Test -- Multiple Stacks

Question: For a multiple stack configuration, if I elect to perform the flow-to-load ratio or GHR test on a combined basis, what happens if normal load flow RATAs are performed at the individual stacks in the same calendar quarter, but the RATAs are not performed simultaneously? May I exclude any hours "prior to completion" of the RATAs (as described in Section 2.2.5(c)(5) of Appendix B) from the quarterly flow-to-load data analysis?

Answer: You may exclude from the quarterly flow-to-load analysis all hours preceding the normal load flow RATA with the latest completion date and time.

References: Appendix B, Section 2.2.5(c)(5)

Key Words: Flow-to-load test, GHR, Multiple stacks, Reporting

History: First published in December 2000, Update #13; revised in October 2003 Revised Manual

Question 3.42 REVISED

Topic: Flow-to-load Ratio Test -- Multiple Stacks

Question: For a unit with a multiple stack configuration, if I elect to perform the flow-to-load ratio or GHR test on a combined basis, what happens if there is a documented monitor repair of the flow monitor on one stack during a particular quarter, followed by a successful abbreviated flow-to-load test? May I exclude any hours "prior to completion of the abbreviated flow-to-load test" (as described in Section 2.2.5(c)(6) of Appendix B) from the quarterly flow-to-load data analysis?

Answer: Yes. You may exclude all of the hours preceding completion of the successful abbreviated flow-to-load test from the quarterly flow-to-load analysis, even though a flow monitor repair was made at only one stack.

References: Appendix B, Section 2.2.5(c)(6)

Key Words: Flow-to-load test, GHR, Multiple stacks, Reporting

History: First published in December 2000, Update #13; revised in October 2003 Revised Manual

Question 3.43 REVISED

Topic: Flow-to-load Ratio Test -- Exemptions

Question: Is there any way to obtain an exemption from the quarterly flow-to-load ratio test?

Answer: Yes. First, units that do not produce electrical or steam load (e.g., cement kilns) are exempted from flow-to-load testing under section 7.8 of Appendix A. For a load-based unit with a complex exhaust configuration, if you can document (by means of historical CEMS data, operating log information, etc.) that the flow-to-load test is infeasible, either from a technical or practical standpoint, you may petition EPA under Section 7.8 of Appendix A for an exemption from the test. Any such petition would have to demonstrate convincingly that the flow-to-load ratio is either unquantifiable or excessively variable.

References: Appendix A, Section 7.8

Key Words: Exemptions, Flow-to-load test, Petition

History: First published in December 2000, Update #13; revised in October 2003 Revised Manual

Question 3.44 NEW

Topic: Converting Volumetric Flow Data to Standard Temperature and Pressure

Question: How should the correction to standard pressure be performed for the "average volumetric flow rate for the hour (scfh)" in EDR v2.1/2.2, record type 220, column 29? Specifically, must local, real time, hourly barometric pressure be used, or can an annual or multi-year average pressure for the local area, corrected to the elevation of the flow monitor, be used in the P_{stack} term in section 6 of Appendix F, Part 75?

Answer: To convert from actual flue gas volumetric flow rate to the required flue gas volumetric flow rate at standard temperature and pressure, use the equation in

Part 75, Appendix F Section 6: $F_{STP} = F_{Actual} (T_{Std}/T_{Stack}) (P_{Stack}/P_{Std})$. For the barometric pressure portion of P_{Stack} (P_{Stack} = barometric pressure at the flow monitor location + flue gas static pressure), EPA recommends that you use an on-site pressure sensor. Inexpensive, electronic pressure sensors are commercially available. The pressure sensor should be calibrated according to the manufacturer's instructions. If the pressure sensor is located at a different elevation than the flow monitor, the pressure output should be corrected to the flow monitor elevation (in the lower atmosphere, pressure changes about minus 1 inch Hg per 1,000 feet increase in elevation).

References: Appendix F, Section 6; Revised EDR Version 2.1/2.2 Reporting Instructions

Key Words: Flow monitoring, Reporting

History: First published in October 2003 Revised Manual

SECTION 4
NO_x MONITORING

Question 4.1 RETIRED

Question 4.2 REVISED

Topic: NO_x Emission Rate System Availability

Question: If the diluent (O_2 or CO_2) monitor and NO_x monitor have different availabilities, what would be the availability of the system?

Answer: Section 75.33(c) states that valid NO_x emission rates (i.e., lb/mmBtu) must be obtained for each hour; if they are not, the missing data procedures apply. A valid hourly NO_x emission rate in lb/mmBtu depends upon two valid monitor readings (i.e., pollutant and diluent readings). If either hourly reading is invalid, then the emission rate for that hour is also invalid. Therefore, for NO_x, the data availability is calculated based only upon those hours during which both the pollutant and diluent monitors provide valid readings, and the pool of historical lb/mmBtu readings used to fill in missing data must likewise consist of only those hours for which both monitors provide valid readings.

Note that Section 2.1.4 of Appendix B clearly states, regarding the daily calibration error checks, that a NO_x-diluent monitoring system "is considered out-of-control if the calibration error of either component monitor exceeds twice the applicable performance specification in appendix A to this part." In summary, the NO_x monitoring system is considered unavailable during any clock hour in which either the pollutant or diluent monitor (or both) is unavailable.

References: § 75.33(c); Appendix B, Section 2.1.4(a)

Key Words: Data validity, NO_x monitoring

History: First published in Original March 1993 Policy Manual; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 4.3 RENUMBERED AS QUESTION 26.1

Question 4.4 RETIRED

Question 4.5 RETIRED

Question 4.6 RETIRED

Question 4.7 RENUMBERED AS QUESTION 26.2

Question 4.8 RETIRED

Question 4.9 REVISED

Topic: NO_x CEMS -- Probe Location

Question: What measurement site and sample point location criteria should be used for an installed NO_x CEMS ?

Answer: To determine an acceptable CEMS measurement site, follow the guidelines in Sections 8.1, 8.1.1, 8.1.2 of Performance Specification No. 2 (PS No. 2) in Appendix B to 40 CFR 60. Then, use the following guidelines to locate the measurement point(s) or path. For point CEMS (single point or path that is less than 10 percent of the equivalent stack diameter), you should locate the probe in accordance with Part 75, Appendix A, Section 1.1.1. For path CEMS, (covering a path which is greater than 10 percent of the equivalent stack diameter), you should locate the probe in accordance with Part 75, Appendix A, Section 1.1.2. For multi-point probes, select representative points at a suitable location, such that the CEMS will be able to pass the RATA. Some experimentation with different probe locations and measurement points may be necessary. Candidate measurement points may include the reference method traverse points specified in Section 8.1.3 of PS No. 2.

References: 40 CFR Part 60, Appendix B (PS 2, §§ 8.1, 8.1.1, 8.1.2 , 8.1.3); Part 75, Appendix A, Sections 1.1.1, 1.1.2, 6.5

Key Words: Monitor location, NO_x monitoring

History: First published in November 1993, Update #2; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 4.10 RENUMBERED AS QUESTION 26.3

Question 4.11 RETIRED

Question 4.12 RENUMBERED AS QUESTION 26.4

Question 4.13 RENUMBERED AS QUESTION 26.5

Question 4.14 RETIRED

Question 4.15 RENUMBERED AS QUESTION 26.6

Question 4.16 RENUMBERED AS QUESTION 26.7

Question 4.17 RENUMBERED AS QUESTION 26.8

Question 4.18 RETIRED

Question 4.19 RENUMBERED AS QUESTION 26.9

Question 4.20 RENUMBERED AS QUESTION 26.10

Question 4.21 RENUMBERED AS QUESTION 26.11

Question 4.22 RETIRED

Question 4.23

Topic: Substitute Data for NO_x Emission Rate When Moisture Value Unavailable

Question: I use Equation 19-3 to calculate NO_x emission rate in lb/mmBtu. If, for a particular hour, quality-assured average NO_x concentration and O_2 concentration values are available, but a quality-assured average percent moisture value is unavailable, should I use substitute data for NO_x emission rate in RT 320?

Answer: No, because the moisture monitor is not a component of the NO_x-diluent monitoring system. Therefore, determine the appropriate substitute data value for percent moisture and use this value in Equation 19-3 to calculate the NO_x emission rate. Report the calculated NO_x emission rate as quality-assured in RT 320.

References: EDR v2.1/2.2 Instructions, RT 320

Key Words: NO_x emission rates

History: First published in March 2000, Update #12

SECTION 5
OPACITY MONITORING

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Question 5.1 REVISED

Topic: Opacity Data Reporting

Question: The requirements for the submittal of opacity data are unclear. Does the data need to go only to the State agency?

Answer: In accordance with the provisions of § 75.65, opacity data are to be reported to the applicable State agency. It is not necessary to include opacity data in the quarterly electronic reports submitted to the Administrator. The reporting requirements in § 75.64(a)(2) specify that opacity data required in § 75.57(f) or § 75.59(a)(8) (as applicable) be included in quarterly reports. The opacity recordkeeping requirements in § 75.57(f) specify that opacity data are to be recorded on a six minute basis, rather than an hourly basis, because State requirements commonly specify six-minute averaging times. Since opacity data are to be reported to the State, opacity data should not be included in the quarterly reports sent to EPA.

References: § 75.57(f), § 75.59(a)(8), § 75.65

Key Words: Opacity monitoring, Reporting

History: First published in Original March 1993 Policy Manual; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 5.2

Topic: Opacity Requirements

Question: If monitoring and reporting for opacity are in compliance with State requirements, will this be considered as satisfying the requirements in Part 75?

Answer: Yes, in general. Compliance with State opacity monitoring and reporting requirements would satisfy the requirements of Part 75 since § 75.65 specifies that opacity reporting be performed in a manner specified by an applicable State or local pollution control agency. In addition to complying with the reporting requirements in § 75.65, however, owners or operators are also subject to specific opacity monitoring requirements (§ 75.14) that require opacity monitoring systems to meet design, installation, equipment, and performance specifications in Performance Specification (PS) 1 in Appendix B to 40 CFR Part 60. Therefore, in States where opacity monitoring systems are not subject to the requirements in PS 1, owners and operators must still ensure that opacity monitoring systems meet the PS 1 requirements, even though these monitoring requirements may be beyond those in the applicable State or local regulations.

An owner or operator should continue reporting opacity information according to the requirements contained in the State implementation plan. Opacity information can be submitted according to the reporting and recordkeeping requirements of Part 75; however, where a conflict occurs between existing requirements and Part 75, follow the existing requirements of the State implementation plan.

References: § 75.65, § 75.14

Key Words: Jurisdiction, Opacity monitoring, Reporting

History: First published in November 1993, Update #2; revised in the October 1999 Revised Manual

Question 5.3

Topic: Opacity Data Recordkeeping

Question: If an existing State CEM program already requires recordkeeping and quarterly electronic data submittal for opacity, does the company have to keep an additional set of opacity records in the format prescribed by § 75.57(f)?

Answer: No. If a utility is subject to existing State or local requirements, opacity records may be stored in that format. Section 75.57(f) provides a default record format which must be used only in cases where there are no recordkeeping and reporting formats specified by the applicable State or local agency.

References: § 75.57(f), § 75.65

Key Words: Jurisdiction, Opacity monitoring, Recordkeeping

History: First published in November 1993, Update #2; revised in October 1999 Revised Manual

Question 5.4

Topic: Opacity Monitor Certification

Question: For certification or recertification of an opacity monitor, which version of Performance Specification 1 (PS 1) does § 75.14 refer to -- the one in existence on the effective date (February 10, 1993) of Part 75, or the most current version (the one in effect on the day the monitor will be certified or recertified).

Answer: The most current version. That is, the version of PS 1 in effect at the time of certification or recertification of the opacity monitor pursuant to Part 75.

References: § 75.14

Key Words: Certification tests, Opacity monitoring

History: First published in November 1993, Update #2; revised in October 1999 Revised Manual

Question 5.5

Topic: Opacity Monitoring

Question: If a unit is exempted from opacity monitoring under § 75.14(b), would opacity monitors still be required to meet other existing State and Federal monitoring regulations?

Answer: Yes. An exemption from opacity monitoring under the provisions of § 75.14(b) is applicable only to opacity monitoring requirements in the Acid Rain Rule and does not supersede monitoring requirements in other rules. Therefore, if opacity monitoring is required under other regulatory programs (e.g., New Source Performance Standards or State Implementation Plans), a waiver of opacity monitoring under the Acid Rain Rule would not constitute a waiver of the requirements in other applicable rules.

References: § 75.14(b)

Key Words: Control devices, Opacity monitoring

History: First published in November 1993, Update #2; revised in October 1999 Revised Manual

Question 5.6 REVISED

Topic: Opacity Monitoring -- Exemption

Question: For a unit with a wet flue gas pollution control system, § 75.14(b) allows an exemption from the requirement of § 75.14(a) to install, certify, operate and maintain a continuous opacity monitoring system (COMS), if the owner or operator can "demonstrate that condensed water is present in the exhaust flue gas stream and would impede the accuracy of opacity measurements." What is suggested for such a demonstration?

Answer: Alternatives for Opacity Monitoring in the Presence of Condensed Water Vapor

Section 75.14(a) requires that a coal- or oil-fired unit install, certify and operate a COMS and that each COMS "meet the design, installation, equipment, and performance specifications in Performance Specification 1 in appendix B to part 60 of this chapter." Part 60, Appendix B, Performance Specification 1, § 8.1 allows alternative COMS locations, (e.g., after the electrostatic precipitator (ESP) but before the scrubber), if approved by the Administrator. Thus, if an affected unit has an ESP preceding the scrubber, a source owner or operator could perform the § 75.14(a) required opacity monitoring after the ESP and before the scrubber and avoid the potential problem of condensed water and impeding accuracy of the COMS altogether. Furthermore, this approach would be consistent with Part 60 requirements.

Requesting an Exemption under §75.14(b)

However, if an owner or operator wants an exemption from the COMS requirement under § 75.14(a), the designated representative should submit a petition under § 75.66 for an exemption to the Director of the Clean Air Markets Division (CAMD). We recommend that the petition include: (a) a written statement, certified by the designated representative, that the unit has a wet flue gas pollution control system, and (b) the results of the procedure, described below, demonstrating that the stack gas contains liquid water droplets. The Director of the Clean Air Markets Division would determine whether the petition satisfies the recommended criteria discussed in this guidance or is otherwise acceptable and whether to exempt the unit under § 75.14(b) from the COMS requirement of § 75.14(a). This guidance is not binding and does not represent EPA's final determination on how any particular demonstration must be made to satisfy § 75.14(b). While this guidance does not recommend specific alternative approaches to demonstrating the presence of condensed water or impeding COMS accuracy, it may be possible to make such showings by methods other than the one described below. Any demonstration that either follows or departs from this guidance will be considered on its own merits.

Demonstration of Presence of Condensed Water

To demonstrate whether liquid water droplets are present in the gas stream, a source owner or operator could perform the procedures described in Sections 4.1, 11.0, and 12.1.7 of EPA Method 4 (see Appendix A-3 to 40 CFR Part 60) to demonstrate that the effluent gas stream is saturated. To be most accurate, these procedures for demonstrating saturation should be performed at sampling points representative of the stack gas stream, and under conditions representative of normal operations (e.g., normal load, normal fuel, common weather conditions, and normal control equipment operation) and at the COMS location or, if no COMS is currently installed, at the location that would meet the requirements of Performance Specification 1 in Appendix B of 40 CFR Part 60, except for measurement location condition (3) in § 8.1(2)(i). Under Method 4, applicants make a determination of moisture content for the same time period

using two procedures: (1) the reference method (with impingers) specified under Section 11.0 of Method 4 and (2) using a temperature probe along with either a psychrometric chart or saturation vapor pressure tables with measured stack gas temperature as specified under Section 4.1 of Method 4. Section 12.1.7 provides for two calculations of stack gas moisture content, one calculation for each of these two procedures. If the moisture content from procedure (1) is greater than the moisture content from procedure (2) (at an appropriate level of numerical precision), then the stack gas is saturated and is assumed to have condensed water present.

Demonstration of Impeding Accuracy of Opacity Measurements

EPA would generally continue to consider the demonstration of the presence of condensed water, following the above procedure, sufficient to show impedance of accuracy of opacity measurements, unless the circumstances of a particular case indicate additional information is needed. In which case, EPA may ask for a more conclusive demonstration that moisture actually interferes with opacity measurement.

In addition, the Agency is awaiting the completion of additional tests relating to the use of wet stack opacity monitoring technology. Should such technology be adequately demonstrated, EPA may determine that the exemption authority of § 75.14(b) is of no further utility, and propose to amend or delete § 75.14(b) and thereby require the use of wet stack opacity monitoring technology in all wet stack situations.

Non-Part 75 COMS Requirements May Still Apply

EPA notes that, if a unit is exempted from the § 75.14(a) COMS requirement through an approved petition under §§ 75.14(b) and 75.66, a COMS or an alternative may still be required by another federal or State program. For example, § 60.47a(a) does not allow a subject source to be exempted from a COMS, except where gaseous fuel is the only fuel combusted or if the Administrator approves (separate from a § 75.66 petition) monitoring of alternative parameters because of COMS interferences. In contrast, Part 75 allows a unit to fire oil for up to 15% of its annual heat input and still be considered gas-fired and exempt from the COMS requirement. (Note that in some cases, "the Administrator" refers to the EPA Regional Office and in other cases, where new source performance standards (NSPS) enforcement authority has been delegated, it refers to the State or local agency). The Regional, State, or local office should decide, on a case-by-case basis, whether the information submitted with the application adequately demonstrates that an alternative monitoring approach is justified. To ensure national consistency in such demonstrations, the Regional, State, and local offices should consult with EPA Headquarters.

Units Previously Exempted from COMS

For a unit exempted from installing a COMS under any previous version of this policy, the current policy does not trigger a requirement for resubmission of a request for exemption.

References: § 75.14(b), § 75.66; 40 CFR 60.13(i)(1); 40 CFR Part 60, Appendix A-3, Method 4; 40 CFR Part 60, Appendix B, Performance Specification 1; 40 CFR 60.11; 40 CFR Part 60, Appendix A-4, Method 9.

Key Words: Control devices, Exemptions, Opacity monitoring

History: First published in November 1993, Update #2; revised in March 2000, Update #12; revised in October 2003 Revised Manual

SECTION 6
CO_2 MONITORING

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Question 6.1

Topic: Appendix G Method

Question: Regarding § 75.13(b), what is required to satisfy the Administrator when choosing to use the Appendix G method for estimating daily CO_2 mass emissions?

Answer: If an owner or operator chooses to use the procedures in Appendix G to estimate CO_2 emissions, adherence to applicable calculation and analytical procedures is sufficient and no additional justification for the use of Appendix G is necessary.

References: § 75.13(b)

Key Words: CO_2 monitoring, Excepted methods

History: First published in Original March 1993 Policy Manual

Question 6.2

Topic: Fuel Sampling

Question: If the recording and reporting of the percent carbon in fuel for use in Equation G-1 is not required, why do we sample for it? Could the value not be based on off plant records?

Answer: Section 2.1 of Appendix G requires that the carbon content be determined using fuel sampling and analysis. This does not require a separate sample if the utility (or fuel supplier) has already performed a sample according to the specified procedures.

References: Appendix G, Section 2.1

Key Words: CO_2 monitoring, Fuel sampling

History: First published in November 1995, Update #7

Question 6.3

Topic: Missing Carbon Content Data

Question: Is there any procedure that applies when percent carbon is missing?

Answer: When carbon content data are missing, report a default value from Table G-1.

References: Appendix G, Section 5.2.1

Key Words: CO_2 monitoring, Fuel sampling, Missing data

History: First published in November 1995, Update #7

Question 6.4

Topic: Negative CO_2 Readings

Question: During start up, the CO_2 readings are very low or negative values. According to EPA guidance on negative emissions, the negative values are switched to zero. Thus, the heat input result is zero for the hour. ETS gave me an error that I should have positive heat input when the unit is operated. This is more complicated when I have a common stack.

Answer: Use the diluent cap value (5.0% CO_2 for boilers or 1.0% CO_2 for combustion turbines) to calculate the heat input rate when this situation occurs.

References: Appendix F, Section 3.3.4

Key Words: CO_2 monitoring, Diluent monitors

History: First published in October 1999 Revised Manual

Question 6.5

Topic: Use of Diluent Cap With High Percent Moisture

Question: When using the diluent cap with Equations 19-3, 19-5, F-14A or F-17 it is possible to have unrepresentative or negative results if the percent moisture is high. How do I use these equations with the diluent cap?

Answer: The agency has developed special variations of these equations for use with the diluent cap. These equations are to be used during any hour in which the diluent cap is used in place of Equations 19-3, 19-5, F-14A, and F-17. These equations have been added to the EDR v2.1/2.2 instructions. When using these equations report each equation in RT 520 and use the correct formula ID in RTs 320 and 300 for each hour.

If you use Equation 19-3 for NO_x emission rate, use Equation 19-3D for any hour in which you use the diluent cap.

If you use Equation 19-5 for NO_x emission rate, use Equation 19-5D for any hour in which you use the diluent cap.

If you use Equation F-14A to determine percent CO_2 from percent O_2, use Equation F-14D for any hour in which you use the diluent cap.

If you use Equation F-17 for heat input, use Equation F-17D for any hour in which you use the diluent cap.

References: Appendix F, Equations F-14A and F-17; 40 CFR Part 60, Appendix A, RM 19

Key Words: Diluent cap

History: First published in March 2000, Update #12

SECTION 7
BACKUP AND PORTABLE MONITORING

Page

Question 7.1 REVISED

Topic: Portable Gas Analyzers

Question: Can a portable rack of gas analyzers be used as backup monitoring systems for multiple locations? Describe what constraints or limitations may apply.

Answer: There are two ways that a portable rack of gas analyzers may be used as backup monitors for multiple locations:

(1) The portable analyzers may be operated as reference method backup monitoring systems (i.e., operated according to EPA Method 3A, 6C, or 7E). Detailed guidance on the use of reference method backup monitors is given in Section 21 of this Policy Manual; or

(2) The analyzers may be used either as "regular non-redundant backup monitoring systems" or as "like-kind replacement analyzers" (see § 75.20(d)).

A regular non-redundant backup monitoring system uses a different probe and sample interface from the primary monitoring system. Regular non-redundant backup monitoring systems must be certified at each location where they will be used. All certification tests in § 75.20(c), except for the 7-day calibration error test, are required.

If the portable analyzers qualify as like-kind replacement analyzers (see Question 7.22), you may use them on a short-term basis (e.g., when maintenance is being performed on the primary analyzers), by connecting them to the same probe and interface as the primary gas monitors. Initial certification of a like-kind replacement analyzer is not required.

For both regular non-redundant backup monitoring systems and like-kind replacement analyzers, a linearity test is required each time that the backup monitor is brought into service.

Regular non-redundant backup monitoring systems must be identified in the monitoring plan required under § 75.53 as separate monitoring systems with unique system ID numbers.

In each quarter that a like-kind replacement analyzer is used for data reporting, it must be represented in the electronic monitoring plan as a component of the primary monitoring system, and must be assigned a component ID that begins with the letters "LK" (e.g., "LK3"). Data from the like-kind replacement analyzer are reported under the primary monitoring system ID number, and an hourly method of determination code (MODC) of "17" must be reported in the EDR whenever a like-kind replacement analyzer is used. Part 75 allows manual entry of both the component ID and the MODC for like-kind replacement analyzers.

The use of a regular non-redundant backup monitoring system or like-kind replacement analyzers is limited to 720 hours per year per parameter (i.e., ≤ 720 hours each for SO_2, NO_x, CO_2, or O_2) at each unit or stack location. To use a regular non-redundant backup monitoring system more than 720 hours per year at any location, a RATA is required. To use like-kind replacement analyzers more than 720 hours per year at a unit or stack location requires redesignation of the analyzers as regular non-redundant backup systems, which then must be certified at that location.

References: § 75.20(d)

Key Words: Backup monitoring, Monitor location, Reference methods

History: First published in Original March 1993 Policy Manual; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 7.2 REVISED

Topic: Non-redundant Backup Monitoring Systems

Question: Can an analyzer be certified and then be taken out of service and stored for use as a backup in case of failure of a primary analyzer?

Answer: Yes. Since the backup monitor was certified at the stack or unit location, and since the only description of the backup monitor is that it is an analyzer, the monitor should, in the absence of additional information, be designated as a regular non-redundant backup system. The backup monitoring system may be used for up to 720 hours per year at the location where it was certified.

Note: If the spare analyzer in this question meets the criteria specified in Question 7.22 and if, when brought into service, it used the same sample interface as the primary monitor, the spare analyzer could be redesignated as a "like-kind replacement analyzer" (see also Question 7.1).

References: § 75.20(d)

Key Words: Backup monitoring, Monitor location

History: First published in Original March 1993 Policy Manual; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 7.3

Topic: Backup Reference Method -- Valid Hour

Question: When providing backup monitoring with reference method testing, are two data points per hour in separate 15-minute quadrants acceptable?

Answer: The criteria that § 75.10(d)(1) specifies for primary monitoring data also apply to reference method backup monitoring data; during periods other than calibration, maintenance, or quality assurance activities, an hourly average is not valid unless it is calculated from data collected in each of the four successive 15-minute periods in the hour. During calibration, maintenance, or quality assurance, hourly averages are considered valid if they are calculated from data collected in at least two of the four successive 15-minute periods in the hour (see also Question 21.19).

References: § 75.10(d)(1)

Key Words: Backup monitoring, Data validity, Reference methods

History: First published in Original March 1993 Policy Manual; revised in October 1999 Revised Manual

Question 7.4

Topic: Reference Method and Backup Monitoring -- Overview

Question: Please clarify the rule requirements concerning the use of reference method backup monitors and certified backup monitors. Additionally, clarify the limitations on spare parts change-out in maintaining certification.

Answer: The owner or operator has three principal options for obtaining data when a primary monitor is not operating: (1) the use of an applicable reference method backup monitor; (2) the use of a certified redundant backup monitor; or (3) the use of a non-redundant backup monitor.

For a discussion of the use of reference method backup systems, see Section 21 of this Policy Manual. For a discussion of redundant backup monitors, see Question 7.11. For a discussion of non-redundant backup monitors, see Question 7.1.

Determination of whether specific spare part change-outs trigger recertification testing must be made on a case-by-case basis. In general, EPA does not consider routine maintenance activities identified in the QA/QC Plan for the monitor to be activities that require recertification. Additional guidance regarding the types of changes to a monitoring system that necessitate recertification is provided in

Section 13 of this Policy Manual. Whenever it is unclear whether a specific change necessitates recertification testing, contact the appropriate EPA Regional Office for clarification.

References: § 75.20(b) and (d)

Key Words: Backup monitoring, Recertification, Reference methods

History: First published in Original March 1993 Policy Manual; revised in October 1999 Revised Manual

Question 7.5

Topic: Reference Methods—Single-Point Sampling

Question: If we can demonstrate non-stratification of stack gases, would we be allowed to apply single point sampling for Reference Methods 3A, 6C, and 7E?

Answer: Yes, if the following conditions are met.

(1) If the reference methods are used as backup monitoring systems for obtaining Acid Rain Program data, single-point monitoring is allowed in accordance with the guidelines in Question 21.16.

(2) If the reference methods are used for Part 75 RATA applications, Section 6.5.6 of Appendix A allows single-point sampling if stratification is demonstrated to be absent at the sampling location. A 12-point stratification test is required prior to each RATA. To qualify for single point sampling for a particular gas, Section 6.5.6.3(b) specifies that the concentration at each traverse point must deviate by no more than 5.0% from the arithmetic average concentration for all traverse points. The results are also acceptable if the concentration differs by no more than 3 ppm or 0.3% CO_2 (or O_2) from the average concentration for all traverse points. For each pollutant or diluent gas, if these criteria are met, a single sampling point, located along one of the traverse lines used during the stratification test and situated at least 1.0 meter from the stack wall, may be used for the reference method sampling.

References: 40 CFR Part 60, Appendix B, PS 2 (3.2)

Key Words: Backup monitoring, RATAs, Reference methods

History: First published in Original March 1993 Policy Manual; revised in October 1999 Revised Manual

Question 7.6

Topic: Use of Non-Redundant Backup Monitors

Question: Does the 720 hours per year of allowable use of a non-redundant backup monitor or monitoring system apply to each such monitor or monitoring system at a facility?

Answer: No. The 720 hours of allowable use of non-redundant backup monitors applies to the unit or stack location, not to any particular monitor or monitoring system (see Question 7.1). Therefore, it is possible for a non-redundant backup monitor or monitoring system which is used at more than one unit or stack location to accumulate more than 720 hours of use per year (e.g., 500 hours at Stack #1 and 500 hours at Stack #2).

References: § 75.20(d)

Key Words: Backup monitoring

History: First published in Original March 1993 Policy Manual; revised in October 1999 Revised Manual

Question 7.7

Topic: Data Validity—Backup Monitoring Systems

Question: During backup monitoring, are data considered valid?

Answer: Data collected by a backup monitor during primary monitor downtime would be valid if: (1) the data are obtained using a reference method backup monitor, a certified redundant backup monitor or a non-redundant backup monitor; and (2) the backup monitor is in-control, with respect to all of its applicable quality assurance requirements.

References: § 75.10(e), § 75.32(a)

Key Words: Backup monitoring, Data validity

History: First published in Original March 1993 Policy Manual; revised in October 1999 Revised Manual

Question 7.8

Topic: Monitor Location -- Certification Requirements

Question: Will a certification on a single location for a portable backup CEM system be applicable to other previously approved monitoring locations?

Answer: No. A portable back-up monitor which is certified at a particular unit or stack location is classified as a regular non-redundant backup monitoring system (see Question 7.1). This type of monitoring system must be separately certified at each location where it is used to obtain data.

References: § 75.20(d)

Key Words: Backup monitoring, Certification process, Monitor location

History: First published in Original March 1993 Policy Manual; revised in October 1999 Revised Manual

Question 7.9

Topic: Primary and Backup Designations

Question: Can a primary monitor on one unit be used as a backup monitor on another unit, and vice-versa?

Answer: Yes. Section 75.10(e) provides that a particular monitor may be designated both as a certified primary monitor for one unit and as a certified redundant backup monitor for another unit. An example of this would be an SO_2 analyzer which is *continuously* time-shared between Units 1 and 2. If Unit 2 has its own separate primary SO_2 monitoring system, the time-shared analyzer could then be designated both as the primary SO_2 monitoring system for Unit 1 and as a redundant backup SO_2 monitoring system for Unit 2.

References: § 75.10(e)

Key Words: Backup monitoring

History: First published in Original March 1993 Policy Manual; revised in October 1999 Revised Manual

Question 7.10

Topic: Backup Monitoring -- Valid Data

Question: Suppose that a company has both a certified primary and a certified redundant backup NO_x monitoring system. The primary system consists of a NO_x analyzer [component ID # 001] and a diluent analyzer [component ID # 002]. The redundant backup system consists of a NO_x analyzer [component ID # 003] and a diluent analyzer [component ID # 004]. What would happen if either the primary NO_x analyzer or the primary diluent monitor (but not both) were to go down -- could the backup NO_x monitor [003] be used with the primary diluent monitor [002] or vice-versa (i.e., could the backup diluent monitor [004] be used with the primary NO_x analyzer [001])?

Answer: Provided that the [001 - 004] and [003 - 002] combinations are included in the company's monitoring plan as additional redundant backup NO_x systems and that these systems have been certified, the proposed procedure would be acceptable.

References: § 75.20(d), § 75.30(b)

Key Words: Backup monitoring, Certification tests, Data validity, NO_x monitoring

History: First published in November 1993, Update #2; revised in October 1999 Revised Manual

Question 7.11

Topic: Redundant Backup Monitoring

Question: We are planning to install completely redundant CEM systems on all of our emission stacks. These systems will be on hot standby. In other words, our backup systems will be certified and will undergo all of the same QA/QC procedures and testing that our primary systems do. The backup monitors will operate continuously as if they were our primary monitors.

We plan to use the backup data when our primary monitor is out of service or the primary data is invalid. This will minimize our use of the missing data procedures.

It is our understanding that because our backup system will be on hot standby it will not be necessary to run a linearity check before using the data. Please confirm.

Answer: Your understanding is correct. Section 75.20(d) states that before a *non-redundant* backup monitor is used, it must undergo a linearity check. This requirement applies when the backup analyzer has been on the shelf and would

need to be calibrated before being placed in service. However, for a *redundant* backup system, which is certified, operated, calibrated and maintained in the same manner as a primary system there is no need to perform a linearity check each time the backup system is brought into service.

A redundant backup system must comply with the primary CEM quality assurance and quality control requirements in Appendix B (one of which is to perform quarterly linearity checks), with the exception that daily calibration error tests are only required to validate data when the redundant backup system is actually used to report Acid Rain Program data. Provided that the certified redundant backup monitor is operating in-control with respect to all of its daily, quarterly, semiannual, and annual QA requirements, it may be used to generate quality-assured data whenever the primary monitor is down.

Note: A redundant backup monitoring system is designated as "RB" in the electronic data reporting format under the data element "Primary/Backup Designation" in RT 510.

References: § 75.20(d)

Key Words: Backup monitoring, Monitoring plan, Quality assurance

History: First published in November 1993, Update #2; revised in October 1999 Revised Manual

Question 7.12

Topic: Use of Reference Method Backups

Question: Has EPA established a policy regarding the use of Reference Method Backup monitoring systems? Is EPA accepting data reported from reference method backups prior to publishing final guidance?

Answer: Yes, the EPA has established a policy regarding the use of Reference Method Backup monitoring systems. The EPA has published final guidance in Section 21 of this Policy Manual.

References: § 75.24(c)(2), § 75.30(b)

Key Words: Backup monitoring, Reference methods, Reporting

History: First published in November 1994, Update #4; revised March 1995, Update #5; revised in October 1999 Revised Manual

Question 7.13

Topic: Definition of Reference Method Backup Monitoring Systems

Question: Can a reference method backup system include a NO_x concentration component from a certified primary or backup monitoring system in combination with a reference method CO_2 monitor?

Answer: No. EPA will reject as part of the monitoring plan review process any systems which represent a combination of analytical components from a certified Part 75 system and a reference method instrument. The EPA has published final guidance on this issue in Section 21 of this Policy Manual (see Question 21.5).

References: § 75.24(c)(2), § 75.30(b)

Key Words: Backup monitoring, Monitoring plan, Reference methods

History: First published in November 1994, Update #4; revised March 1995, Update #5; revised in October 1999 Revised Manual

Question 7.14 REVISED

Topic: Linearity Check Requirements for Non-redundant Backup Systems

Question: When must a linearity check of non-redundant backup systems be performed?

Answer: In general, a linearity check must be passed each time a "regular non-redundant backup monitoring system" or a "like-kind replacement analyzer" is brought into service.

Data from the monitoring system or analyzer are considered invalid until the linearity test is passed, unless a probationary calibration error test is performed and passed when the system or analyzer is brought into service. In that case, data from the system or analyzer may be considered "conditionally valid" for up to168 unit or stack operating hours (beginning at the hour of the probationary calibration error test), provided that a successful linearity test is completed within the 168 operating hour window.

When conditional data validation is used, if the linearity test is passed within the 168 unit or stack operating hour window, then all of the conditionally valid emissions data, from the hour of the probationary calibration error test until the hour of completion of the linearity test, are considered to be quality-assured data, suitable for reporting. However, if, during the 168 hour window, the linearity test is either failed or aborted due to a problem with the monitor, then all of the conditionally valid data recorded up to that point are invalidated. Following

corrective actions, the conditionally valid data status may be re-established by performing another probationary calibration error test provided that the 168 operating hour window of the original probationary calibration error test (i.e., the one that was performed when the monitor was first brought into service) has not expired. If the original 168 operating hour window expires without a successful linearity check having been completed, then the monitor may not be used for reporting until a linearity test is passed.

References: § 75.20(d)

Key Words: Backup monitoring, Linearity

History: First published in November 1994, Update #4; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 7.15

Topic: Testing Requirements for Time-shared Backup Systems

Question: Two affected units discharge to a common stack. The required SO_2, NO_x, and CO_2 monitoring is done in the individual ducts leading to the common stack, using separate primary dilution systems for each unit. However, the monitoring systems are configured in such a way that the Unit 2 analyzers can serve as backups for Unit 1 (and vice-versa) by time-sharing the analyzers between the two units. What are the certification and QA requirements for the backup monitoring systems in this configuration?

Answer: In RT 510 of the electronic monitoring plan, it is necessary to define each system including the probe component in order to distinguish one system from another. In the case described above, the backup monitoring systems should be classified as non-redundant backups in the monitoring plan, and not as redundant backups, since they can serve as backups. This implies that they will operate only occasionally. For example, the Unit 2 analyzer is not *continuously* time-shared between Units 1 and 2 (as was the case in Question 7.9), but time-sharing is done only when the Unit 1 analyzer is out of service.

Use the following guidelines to determine how many and what type of initial certification tests are required for each non-redundant backup monitoring system:

(1) A linearity check of each non-redundant backup monitor is required, without exception.

(2) A cycle/response time test is required in the time-shared mode to ensure that at least one data point will be obtained every 15 minutes from each unit. Report the result of this test for each system.

(3) A RATA and bias test are required for each non-redundant backup system; and a bias test of each backup system is required. If, for each unit, the RATAs are conducted in the time-shared mode, separate RATAs and bias tests for the primary systems in the normal sampling mode are not required.

(4) A 7-day calibration error test is *not* required.

For on-going quality assurance (QA) activities, each time that a non-redundant backup monitoring system is brought into service for measuring emissions, it must pass a linearity check. If a non-redundant backup system is used for one or more days, the system must pass a daily calibration error test on each day on which it is used to report data. If its usage continues from one calendar quarter into the next, it becomes subject to the same quarterly linearity requirements as a primary monitoring system. A RATA of each non-redundant backup system must be performed, at a minimum, once every eight calendar quarters.

References: § 75.20(d); Appendix A; Appendix B

Key Words: Backup monitoring, Certification tests, Common stack, Quality assurance, Time-sharing

History: First published in March 1995, Update # 5; revised in October 1999 Revised Manual

Question 7.16

Topic: Use of Backup DAHS Components

Question: Has EPA established a policy regarding the use of backup DAHS components?

Answer: Yes. The elements of the policy are presented in question and answer format in Questions 7.17 through 7.21.

References: Not applicable

Key Words: Backup monitoring, DAHS

History: First published in July 1995, Update #6

Question 7.17

Topic: Use of Backup DAHS Components

Question: How should Part 75 monitoring systems containing backup digitizer and/or software components be represented in the monitoring plan?

Answer: All of the analytical, digitizing, and software components (primary and backup) which are to be used for data reporting must be shown in the data handling system flow diagram required by § 75.53(e)(2)(iii).

Each unique data reporting pathway (i.e., each analyzer-digitizer-software combination) must be represented as a separate monitoring system in RTs 510 of the monitoring plan.

Classify each data reporting pathway as either principal or auxiliary. A principal data pathway is one for which all of the initial certification tests and on-going quality assurance tests are required. An auxiliary data pathway is one for which only calibration error tests and DAHS verification tests are required. Use the following guidelines to identify the principal and auxiliary data pathways:

(1) Each unique analyzer/digitizer combination must be included in at least one principal data pathway;

(2) The principal data pathways may all be connected to the same software component; and

(3) Each data reporting pathway not identified as a principal pathway is classified as an auxiliary pathway.

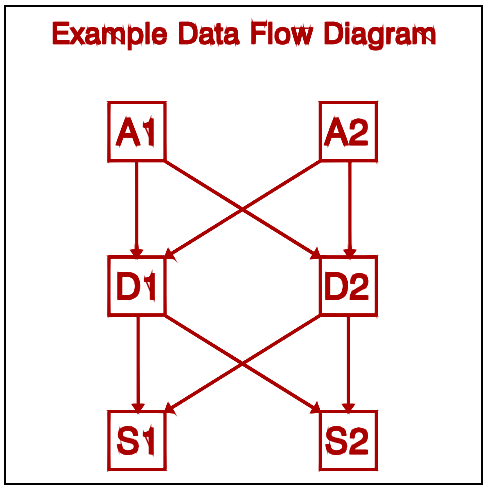
The principal data pathways are represented in RTs 510 of the monitoring plan (as appropriate) as either primary (P) systems, redundant backup (RB) systems, or non-redundant backup (B) systems. The auxiliary data pathways are represented as data backup (DB) systems in RTs 510 and must have separate system IDs. Data backup systems have the same analytical and digitizing components as one of the primary or backup monitoring systems, but have a different software component.

Each backup software component must be assigned a unique component ID number and serial number in RT 510.

Digitizers must be shown as system components in RTs 510 only: (1) if the digitizers perform Table C calculations for Part 75 data reporting; and/or (2) when a particular analyzer is connected to two or more different digitizers through which data can be generated for reporting purposes.

Sufficient formulas must be included in RTs 520 of the plan to provide traceability for each monitoring system that is used to report data.

Example: Consider the following situation in which primary and redundant backup analyzers, digitizers and software components are shown in the data flow diagram in the monitoring plan. The example diagram is:



Based on this example diagram, a total of eight data reporting pathways are identified:

Reporting Pathways from Various Analyzer - Digitizer - Software Combinations								
Pathway #	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Analyzer #	A1	A1	A1	A1	A2	A2	A2	A2
Digitizer #	D1	D1	D2	D2	D2	D2	D1	D1
Software #	S1	S2	S1	S2	S1	S2	S1	S2
Pathway Designation	P	DB	RB	DB	RB	DB	RB	DB

These eight data pathways represent four unique analyzer/digitizer combinations (A1/D1, A1/D2, A2/D2 and A2/D1). Therefore, according to Guideline (1), above, a minimum of 4 principal data pathways are needed. According to guideline (2), above, the principal pathways may all include the same software component. Therefore, pathways **1, 3, 5,** and **7** (which all include S1) are selected as principal, and **2, 4, 6,** and **8** are the auxiliary pathways.

Pathway **1** is designated as the primary (P) monitoring system in RTs 510. The other principal pathways (**3, 5,** and **7**) are designated as redundant backup (RB) systems. Auxiliary pathways **2, 4, 6,** and **8** are designated as data backup (DB) systems. The digitizers D1 and D2 must be shown as system components in RTs 510 because analyzer A1 is connected to both of the digitizers, as is analyzer A2.

References: § 75.54(e)(2)(iii)

Key Words: Backup monitoring, DAHS, Monitoring plan

History: First published in July 1995, Update #6; revised in October 1999 Revised Manual

Question 7.18

Topic: Use of Backup DAHS Components

Question: How should certification, recertification, and periodic QA/QC be handled when the monitoring plan includes systems containing backup digitizer and/or software components?

Answer: **For certification or full recertification**

(1) Appendix A Certification Tests: A complete battery of Appendix A certification tests must be done for each principal data pathway (i.e., for each system identified as primary, redundant backup, or non-redundant backup in RTs 510 of the monitoring plan).

The results of the required Appendix A tests and a certification or recertification application must be submitted in accordance with § 75.63

For each auxiliary data pathway (i.e., for each system identified as data backup (DB) in RTs 510 of the monitoring plan), a daily calibration error test is the only field test requirement. These results must be submitted both in hard-copy (DAHS printouts) and electronically. For the electronic submittal, use RTs 600. Submit two RTs 600 (zero and high) for the daily calibration error test of each data backup system.

(2) DAHS Verification: The following demonstrations are required for each primary and backup software component: (1) verification of monitoring plan formulas; (2) missing data routine check; and (3) verification statement, signed by the DR, that the data are in proper EDR format.

For QA/QC

(1) Daily QA/QC: The ordinary requirements of Part 75 apply to all data pathways. That is, for each monitoring system in RTs 510 that is used for data reporting on a given day (whether the system is classified as primary, redundant backup, non-redundant backup, or data backup), there must be an associated successful daily calibration, consistent with Sections 2.1.3 through 2.1.6 of Appendix B to validate the hourly data from the system for that day.

(2) Periodic QA/QC: All required quarterly, semiannual, and annual QA/QC tests (i.e., linearity checks, RATAs, etc.), must be done as specified in Appendices A and B to Part 75 for each monitoring system that corresponds to a principal data reporting pathway (i.e., for primary, redundant backup, and non-redundant backup systems). No quarterly, semiannual, or annual QA tests or any additional reporting is required for the auxiliary data pathways (i.e., the data backup systems).

References: § 75.20(d), § 75.63; Appendix B, Section 2

Key Words: Backup monitoring, Certification tests, DAHS, Quality assurance

History: First published in July 1995, Update #6; revised in October 1999 Revised Manual

Question 7.19

Topic: Use of Backup DAHS Components

Question: Are there any restrictions on the use of auxiliary data reporting pathways (i.e., data backup systems)?

Answer: Yes. The auxiliary pathways may not be used unless all of the principal data reporting pathways (i.e., the primary, redundant backup, and non-redundant backup monitoring systems) are unable to record and/or report valid data.

References: § 75.10(e)

Key Words: Backup monitoring, DAHS, Reporting

History: First published in July 1995, Update #6

Question 7.20

Topic: Use of Backup DAHS Components

Question: What bias adjustment factor (BAF) must be applied when a data backup (DB) system is used for Part 75 reporting?

Answer: Each data backup (DB) system identified in the monitoring plan differs from one of the principal systems in the plan (i.e., from either a primary, redundant backup or non-redundant backup system), only in that it has a different software component. Therefore, for each data backup system, use the BAF associated with

the principal monitoring system that has the same analyzer and digitizer components as the DB system.

In the example given in Question 7.17, above, DB systems 2, 4, 6, and 8 would use the same BAF factors as systems 1, 3, 5, and 7, respectively.

References: Appendix A, Section 7.6.5

Key Words: Backup monitoring, Bias adjustment factor, DAHS

History: First published in July 1995, Update #6

Question 7.21

Topic: Use of Backup DAHS Components

Question: Suppose that the RTs 510 of my monitoring plan lists a number of monitoring systems, previously approved as redundant backup (RB) systems, which are actually data backup (DB) systems. Must I update my monitoring plan?

Answer: Unless you decide to fully quality assure data from the system as a redundant backup system, you must redesignate the "RB" systems as "DB" in RTs 510 of the monitoring plan. If you redesignate the redundant backup systems as data backup systems, update the monitoring plan electronically in RT 510 in the next quarterly report submitted. In addition to submitting monitoring plans in the quarterly reports, the Agency is developing a procedure that will allow sources to submit monitoring plans electronically outside of the quarterly report.

References: § 75.53, § 75.64

Key Words: Backup monitoring, DAHS, Electronic report formats, Monitoring plan

History: First published in July 1995, Update #6; revised in October 1999 Revised Manual

Question 7.22

Topic: Definition of Like-kind Replacement Non-redundant Backup Analyzer

Question: What constitutes a like-kind replacement non-redundant backup analyzer, as described in § 75.20(d)(2)(ii)?

Answer: A like-kind replacement analyzer is one that uses the same method of sample collection (dilution-extractive, dry extractive, or in-situ) and analysis (for

example, pulsed fluorescence, UV fluorescence, chemiluminescence) as the analyzer that it replaced. The like-kind replacement analyzer must also use the same probe and interface as the primary system and have the same span value. The full-scale range need not be identical, but must meet the guidelines in Section 2.1 of Appendix A.

References: § 75.20(d)(2)(ii); Appendix A, Section 2.1

Key Words: Backup Monitoring, Like-kind replacement analyzer, Non-redundant backup monitors

History: First published in March 2000, Update #12

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SECTION 8
RELATIVE ACCURACY

Page

Question 8.1 RETIRED

Question 8.2

Topic: Quality Assurance RATAs

Question: Following successful certification, when is the first RATA required?

Answer: According to Section 2.3 of Appendix B to 40 CFR Part 75, the requirement to conduct semiannual or annual relative accuracy test audits (RATAs) is effective as of the calendar quarter following the quarter in which the monitor is provisionally certified (the date when certification testing is completed). Therefore, depending upon whether or not the relative accuracy measured during the initial monitor certification qualifies the monitor for an annual RATA frequency, the *projected* deadline for the next RATA would either be the second or fourth calendar quarter following the quarter during which the monitor is provisionally certified. However, as explained in the following paragraphs, the *projected* RATA deadline may not be the *actual* deadline, depending on how much a unit operates and what type of fuel is combusted.

The May 26, 1999 revisions to Part 75 changed the method of determining RATA deadlines from a calendar quarter basis to a QA operating quarter basis. A QA operating quarter is a calendar quarter in which there are ≥ 168 unit or stack operating hours. Partial operating hours are counted as full hours in determining whether a quarter is a QA operating quarter (see definitions of unit operating hour and stack operating hour in § 72.2).

If a CEMS obtains a semiannual RATA frequency, the next RATA is due by the end of the second QA operating quarter following the quarter in which the RATA is completed. Similarly, an annual RATA frequency means that the next RATA is due by the end of the fourth QA operating quarter following the quarter in which the RATA is completed.

For units that consistently operate more than 168 hours in each quarter, there will be little or no difference between the calendar quarter and QA operating quarter methods of determining RATA deadlines. However, for units that operate infrequently, a one quarter extension of the projected RATA test deadline may be claimed (using RT 697) for each calendar quarter that does not qualify as a QA operating quarter. Also, for units that burn only very low sulfur fuel (as defined in § 72.2) during a particular calendar quarter, a one quarter extension of the SO_2 monitor RATA deadline may be claimed. Note that there is an upper limit on all such RATA deadline extensions. The deadline may not be extended beyond the end of the eighth calendar quarter following the quarter in which a RATA was last performed.

If unforseen circumstances prevent a RATA from being completed by the deadline, the grace period provision in Section 2.3.3 of Appendix B may be used.

References: Appendix B, Section 2.3

Key Words: Deadlines, Frequency incentives, RATAs

History: First published in original March 1993 Policy Manual; revised in July 1995, Update #6; revised in October 1999 Revised Manual

Question 8.3 RETIRED

Question 8.4

Topic: Dual-range Monitor RATA

Question: Do RATAs need to be done for both ranges of a dual-range monitor?

Answer: No. In accordance with Section 6.5(c) of Appendix A, simply do the RATA on the range that is considered normal. For units with add-on SO_2 or NO_x controls, the low range is considered normal. When separate monitor ranges are used for different fuel types (e.g., low sulfur and high sulfur fuels), both ranges are considered normal. In such cases, perform the RATA on the range in use at the time of the scheduled test.

References: Appendix A, Section 6.5(c)

Key Words: Dual-range monitor, RATAs

History: First published in May 1993, Update #1; revised in October 1999 Revised Manual

Question 8.5 REVISED

Topic: RATA Frequency Incentive

Question: If we fail our first RATA, and pass a second time, may we repeat the test to qualify for a lower test frequency?

Answer: Yes. Section 2.3.1.4 in Appendix B of Part 75 allows as many RATA attempts as are needed to obtain the desired percent RA or BAF. The only condition is that the data validation procedures in Section 2.3.2 of Appendix B must be followed.

References: Appendix B, Sections 2.3.1.4 and 2.3.2

Key Words: Frequency incentives, RATAs

History: First published in May 1993, Update #1; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 8.6 REVISED

Topic: Flow RATAs – Traverse Points

Question: After alternative site verification with a directional probe traverse of 40 points (or 42 points for rectangular ducts) according to 40 CFR Part 60, Appendix A, Method 1, Section 11.5.2, should subsequent flow Relative Accuracy Test Audits (RATAs), which may use S-type probes, be based on Method 1, Section 11.2.2 traverse point criteria (e.g., 16 points) or the initial 40 (42) point criteria specified in Method 1, Section 2.5.2?

Answer: Either traverse point selection criteria specified in Method 1 (i.e., either 16 points or 40 (42) points) is acceptable for subsequent flow RATAs.

Part 75, Appendix A, Section 1.2 recommends the use of the flow profile procedures in 40 CFR Part 60, Appendix A, Test Method 1, Section 2.5 (which specifies the 40 (42) point traverse) to determine the acceptability of the potential flow monitor location. (The potential flow monitor location is acceptable if the resultant angle is $\leq 20°$ and the standard deviation is $\leq 10°$.) Note that 40 CFR Part 60, Appendix A, Test Method 1, has been revised so that Section 2.5 is now Section 11.5 in the most current version.

Following an acceptable flow profile study, the flow monitor must pass all the required performance tests for certification and QA/QC, including flow RATAs. The selection of traverse points for subsequent flow RATAs, according to Part 75, Appendix A, Section 6.5.6, need only meet the requirements of 40 CFR Part 60, Appendix A, Test Method 1, and **not** Section 11.5.2 specifically.

References: 40 CFR Part 60, Appendix A (RM 1); 40 CFR Part 75, Appendix A, Section 6.5.6

Key Words: Flow monitoring, RATAs, Reference methods

History: First published in May 1993, Update #1; revised in October 2003 Revised Manual

Question 8.7 REVISED

Topic: Flow RATAs

Question: May an electronic manometer be used as the differential pressure gauge when performing a relative accuracy test audit (RATA) on a volumetric flow monitor using 40 CFR Part 60, Appendix A, Method 2? If so, what should the averaging period be?

Answer: Yes, an electric manometer may be used in this circumstance. If regular Method 2 is used for the flow RATA, the electronic manometer should be calibrated according to the procedures in 40 CFR Part 60, Appendix A, Method 2, Section 6.2. The Δp readings from the electronic manometer should be compared to those of a gauge-oil manometer before and after the test series. If Method 2F (3-dimensional probe) or Method 2G (2-dimensional probe) is used for the flow RATA, calibrate the electronic manometer as described in Section 10.3 of those methods.

A minimum averaging period of one minute at each traverse point is recommended when an electronic manometer or transducer is used. The same averaging period should be used for each traverse point in the run.

References: 40 CFR Part 60, Appendix A (RM 2)

Key Words: Flow monitoring, RATAs, Reference methods

History: First published in May 1993, Update #1; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 8.8

Topic: NO_x RATA

Question: What burner configuration should be used when doing a NO_x RATA?

Answer: When performing a pollutant monitor RATA, use the burner configuration that the unit normally uses when operating.

References: Appendix A, Section 6.5

Key Words: Certification tests, RATAs

History: First published in November 1993, Update #2

Question 8.9

Topic: RATA Procedure

Question: Suppose that during the RATA we determine that there is a problem after three or four runs. May we continue the test without counting the three or four runs in the total runs for certification?

Answer: It depends on the nature of the problem. If the reason for discontinuing a RATA is unrelated to the performance of the CEMS being tested (e.g., problems with the reference method or with the affected unit(s)), any valid test runs that were completed prior to the occurrence of the problem may either be used as part of the official RATA or the runs may be disregarded and the RATA re-started. However, if a RATA is aborted due to a problem with the CEMS, the test is considered invalid and must be repeated. In such cases, none of the runs in the aborted test may be used as part of the official RATA and the aborted test may *not* be disregarded (since it affects data validation), but must be reported in the electronic quarterly report.

References: § 75.20(b)(3); Appendix A, Section 6.5.9; Appendix B, Section 2.3.2

Key Words: Certification tests, RATAs

History: First published in November 1993, Update #2; revised in October 1999 Revised Manual

Question 8.10 RETIRED

Question 8.11

Topic: RATA -- Use of BAF

Question: If a unit has been using a bias adjustment factor since its last RATA, should the measurements obtained in the next RATA be multiplied by the adjustment derived from the earlier RATA?

Answer: No. The bias test is designed to determine if the measured values from the CEMS are systematically low relative to the reference method. This can only be determined by using the unadjusted values from the CEMS.

References: Appendix A, Section 7.6.5; Appendix B, Section 2.3

Key Words: Bias, RATAs

History: First published in November 1993, Update #2

Question 8.12 REVISED

Topic: Concurrent Runs for Moisture, CO_2, and O_2 with Flow

Question: Are separate Method 3 (CO_2/O_2) and Method 4 (moisture) runs required for each Method 2 (flue gas velocity) run when performing a flow RATA?

Answer: No, provided that the only reason for measuring moisture or CO_2/O_2 is to determine the stack gas molecular weight. In this case, it is sufficient to collect one sample from Method 3 and Method 4 for every clock hour of a flow RATA or every three successive velocity traverse runs. Alternatively, moisture measurements used solely for the determination of molecular weight may be performed before and after a series of flow RATA runs at a particular load or operating level, provided that the time interval between the two moisture measurements does not exceed three hours. If this option is selected, the results of the before and after moisture measurements are to be averaged, and this average moisture value is to be applied to the data for all runs of the flow RATA.

Since stack gas velocity varies with the square root of one over the stack gas molecular weight (see Eq. 2-7 in Method 2), relatively large variations in O_2, CO_2, and moisture will have a fairly small impact on the calculation of gas velocity. Therefore, if gas composition and moisture data are only used for calculating stack gas molecular weight, collecting Method 3 and Method 4 samples with each Method 2 run is not necessary.

For gas monitor RATAs, however, moisture results are sometimes needed to convert CEM and reference method data to the same basis. In such instances, a one percent change in flue gas moisture content causes a one percent change in the CEM or reference method results. Since changes in stack gas moisture content can create a significant impact on corrected results and the outcome of performance tests, Method 4 samples must be collected with each set of reference method samples when the Method 4 results are used to correct CEM and reference method results to the same moisture basis. Note that if two gas RATA runs are able to be completed within the same hour (60 minute period), the results of a single Method 4 run, taken during the 60 minute period, may be applied to both RATA runs.

References: 40 CFR Part 60, Appendix A (RMs 2, 3, and 4)

Key Words: Certification tests, RATAs, Reference methods

History: First published in November 1993, Update #2; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 8.13 RETIRED

Question 8.14 RETIRED

Question 8.15 REVISED

Topic: Timing Requirements for Flow RATAs

Question: In what time-frame must a multiple-load flow RATA be completed?

Answer: Section 6.5(e) of Appendix A, states that each single-load RATA should be completed within 168 consecutive unit or stack operating hours. For multi-load flow RATAs, up to 720 consecutive unit or stack operating hours are allowed to complete the testing at all load levels.

References: Appendix A, Section 6.5(e)

Key Words: Certification tests, Flow monitoring, RATAs

History: First published in March 1995, Update #5; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 8.16

Topic: Reporting Requirements for Failed RATAs

Question: How are failed or discontinued RATA results to be reported to the Agency?

Answer: A completed, failed RATA should be reported in the same way as a completed, passed RATA. That is, in RT 610, use a run status flag of "1" in column 62 to indicate each run that was used in the relative accuracy calculation and use a run flag of "0" to indicate which runs (maximum of three) were not used in the calculations. Submit RT 611, summarizing the results of the relative accuracy test. For failed RATAs, always leave column 111 (bias adjustment factor) blank.

Discontinued RATAs only have to be reported when they affect data validation. Therefore, when a RATA attempt is aborted due to a problem with the CEMS, it must be reported because the monitoring system is considered to be out-of-control as of the hour in which the test is discontinued. To report an aborted RATA attempt, use a run status flag of "9" for each test run. Do not submit RT 611 for an aborted RATA.

Discontinued RATAs which do not affect data validation do not have to be reported to EPA, but a record of all such RATA attempts must be kept on-site as part of the official test log for the monitoring system(s). Specifically, a discontinued RATA does not have to be reported if the test is discontinued due to a problem unrelated to the performance of the CEMS (e.g., due to a problem with the reference method or with the affected unit(s)).

References: Appendix B, Section 2.3.2

Key Words: Certification tests, Electronic report formats, RATAs, Reporting

History: First published in March 1995, Update #5; revised in October 1999 Revised Manual

Question 8.17

Topic: Rounding RATA Results to Determine RATA Frequency

Question: The results of a NO_x RATA, reported to two decimal places as required by the EDR, come out to 7.51% relative accuracy (RA). Does this qualify for reduced RATA frequency?

Answer: Yes. Section 2.3.1.2 of Appendix B to Part 75 allows annual, rather than semiannual, RATA frequency when the RA is 7.5% or less. The RA specification is to one decimal place. Therefore, a RA of 7.51% qualifies for the annual RATA frequency because, by the normal rules of rounding off, 7.51, to the nearest tenth, is 7.5. If the second decimal place in the reported RA had been 5 or greater, this would have rounded off to 7.6% and the monitoring system would not have qualified for the reduced RATA frequency.

References: Appendix B, Section 2.3.1.2

Key Words: RATAs, Reporting

History: First published in March 1995, Update #5; revised in October 1999 Revised Manual

Question 8.18

Topic: RATA Load Requirements for Common Stacks

Question: Our company has a plant with three units using a common stack. One of those units experienced an unscheduled outage during the last quarter in which we

should perform an annual relative accuracy test audit at three load levels. Should we wait to perform the relative accuracy test audit for flow until all three units are operating again?

Answer: Every effort should be made to perform the relative accuracy test audit by the end of the required quarter. Section 6.5.2.1 of Appendix A defines the range of operation for a unit or common stack. For common stacks, the range of operation extends from the minimum safe, stable load of any unit using the stack to the highest sustainable load with all units in operation. Section 6.5.2.1 further defines the low, mid, and high load levels as 0 - 30%, 30 - 60% and 60 - 100% of the range of operation, respectively. Therefore, in the present example, if a load level of at least 60% of the range of operation could be attained with two units in operation, this would suffice for the high level flow RATA. The mid and low flow tests could then be done at 35% and 10% of the operating range, respectively (note that Section 6.5.2 of Appendix B requires a minimum separation of 25% of the operating range between adjacent load levels). If, however, a true high level data point is not attainable with only two units in operation, then either: (1) perform the high level flow relative accuracy test based upon the maximum attainable operating level of the units operating during that quarter and document in the electronic quarterly report (in the 900-level records) that due to an unscheduled unit outage there was a deviation from the normal flow RATA procedures; or (2) if it is expected that all three units will be back in service soon after the end of the quarter, perform the high-level flow RATA within the 720 unit operating hour grace period allowed under Section 2.3.3 of Appendix B.

References: Appendix A, Sections 6.5.2 and 6.5.2.1; Appendix B, Sections 2.3.1 and 2.3.3

Key Words: Common stack, RATAs

History: First published in March 1995, Update #5; revised in October 1999 Revised Manual

Question 8.19

Topic: Reduced RATA Frequency Standard for Low NO_x Emitters

Question: There are a number of gas and oil fired turbines that have extremely low NO_x concentrations (less than 10 ppm). Their maximum potential concentrations are approximately 60 ppm. Is there an alternative approach for determining RATA frequency for these CEMS?

Answer: Yes, if a unit qualifies as a low emitter for NO_x (< 0.200 lb/mmBtu), it can qualify for the reduced RATA frequency where the average monitor value during the RATA is within 0.015 lb/mmBtu of the average reference method value.

References: Appendix B, Section 2.3.1.2

Key Words: NO_x monitoring, RATAs

History: First published in March 1995, Update #5; revised in October 1999 Revised Manual

Question 8.20

Topic: Schedule of Tests

Question: Is it possible to move an annual RATA from the fourth calendar quarter following the last test to the third or second calendar quarter?

Answer: Yes. You may perform the RATA any time before the end of the *projected* RATA deadline (i.e., two or four calendar quarters following your last test). Therefore, you may adjust your RATA schedule as necessary.

References: Appendix B, Section 2.3

Key Words: Deadlines, RATAs

History: First published in July 1995, Update #6; revised in October 1999 Revised Manual

Question 8.21 REVISED

Topic: RATA Schedule for Flow Monitors

Question: How do I determine when to perform my next flow RATA?

Answer: For a flow monitor, the percent relative accuracy obtained determines when the next test must be performed.

If a flow monitor passes a RATA and the relative accuracy at any load or operating level tested is > 7.5 percent and ≤ 10.0 percent, then the next flow RATA must be performed on a semiannual basis (i.e., within the next two QA operating quarters). If the relative accuracy is ≤ 7.5 percent at all loads or operating levels tested then the next flow RATA must be performed on an annual basis (i.e., within the next four QA operating quarters).

Each time that a 2-load or 3-load flow RATA is completed and passed, the frequency (semiannual or annual) of the next flow RATA is established or re-established. Note, however, that a single-load (normal load) flow RATA may *not*

be used to establish or re-establish the RATA frequency, except when: (1) the single-load RATA is specifically required under Section 2.3.1.3(b) of Appendix B (for flow monitors installed on peaking units and bypass stacks; and for flow monitors that qualify for single-level RATAs under section 6.5.2(e) of appendix A); or (2) a single-load RATA is allowed under Section 2.3.1.3(c) of Appendix B, for a unit which has operated at a single load level (low, mid, or high) for ≥ 85.0% of the time since the last annual flow RATA. Apart from these exceptions, the only way to establish or re-establish the RATA frequency for a flow monitor is to perform a 2-load or 3-load flow RATA.

References: Appendix A, Section 6.5.2(e); Appendix B, Sections 2.3.1.1, 2.3.1.2, 2.3.1.4, and 2.4

Key Words: Deadlines, Flow monitoring, Frequency incentives, RATAs

History: First published in July 1995, Update #6; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 8.22 REVISED

Topic: Reference Method Procedures

Question: In 40 CFR Part 60, Appendix A, Test Method 2, do Figure 2-6 and the Average Stack Gas Velocity (Equation 2-7) require the square root of the average differential pressure or the average of the square roots of the differential pressures?

Answer: Method 2 requires the average of the square roots of the differential pressures. It has come to our attention that some test companies have been incorrectly calculating this average. Sources must ensure that current submittals to EPA are calculated correctly.

References: 40 CFR Part 60, Appendix A (RM 2)

Key Words: Reference methods, Method 2 procedures

History: First published in July 1995, Update #6; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 8.23

Topic: Reference Method Procedures

Question: When using Equation 4-3 in Test Method 4, should the factor: (delta H)/13.6 (i.e., the average pressure differential across the orifice meter divided by 13.6) in Equation 5-1 of Test Method 5 be used to correct the sample volume?

Answer: Under the Acid Rain Program when Test Method 4 is required, either Equation 4-3 or Equation 5-1 may be used to correct the sample volume.

References: 40 CFR Part 60, Appendix A (RM 4)

Key Words: Reference methods

History: First published in July 1995, Update #6; revised in November 1995, Update #7

Question 8.24

Topic: Bias Adjustment for Flow Monitor RATAs

Question: When a single, normal load flow RATA is required (or allowed) to be performed on a flow monitor, should a utility do the bias test on these data? If so, should the data from the normal level be used to calculate a new bias adjustment factor?

Answer: Yes. Perform a bias test for each single load flow RATA required or permitted under Part 75. If the flow monitor passes the bias test, apply a bias adjustment factor (BAF) of 1.000 for all flow data until the next successful flow RATA. If the monitor fails the bias test, calculate a BAF from the normal level RATA and apply this revised bias adjustment factor to each hour of flow rate data, beginning with the hour after the hour in which the RATA testing is completed.

References: Appendix A, Sections 7.6.4 and 7.6.5; Appendix B, Section 2.3.2

Key Words: Bias, Flow monitoring, RATAs

History: First published in November 1995, Update #7; revised in October 1999 Revised Manual

Question 8.25 REVISED

Topic: Use of Short RM Measurement Line after Wet Scrubber

Question: Section 6.5.6 in Appendix A of Part 75 states that the Reference Method (RM) traverse points for gas RATA tests must meet the location requirements of Performance Specification # 2 (PS 2) in Appendix B of 40 CFR 60. Section 8.1.3.2 of PS 2 specifies that downstream of wet scrubbers, the RM traverse points must be located on a long measurement line, with points at 16.7%, 50% and 83.3% of the stack diameter. Use of the alternative short RM measurement line, with points located 0.4 m, 1.0 m and 2.0 m from the stack wall is disallowed in such instances. However, for large-diameter stacks, use of a long measurement path is difficult and presents many logistical problems. Is it possible for the owner or operator of a scrubbed unit to conduct a test or demonstration in order to be allowed to use the short RM measurement line?

Answer: Yes. Part 75 includes provisions in Section 6.5.6 of Appendix A which allow the short measurement line to be used following a wet scrubber, provided that, just prior to each RATA, stratification is demonstrated to be minimal at the sampling location.

To demonstrate this, an initial 12-point stratification test is required at the sampling location (see Section 6.5.6.1 of Appendix A). Reference Methods 6C, 7E, and 3A are used to measure SO_2, NO_x, and CO_2, respectively. Sampling is required for at least 2 minutes at each traverse point. A stratification test is also required for each subsequent RATA at the sampling location. However, for the subsequent RATAs, in lieu of repeating the initial 12-point test, an abbreviated 3-point or 6-point stratification test may be done (see Section 6.5.6.2 of Appendix A).

For each pollutant or diluent gas, Section 6.5.6.3(a) of Appendix A specifies that stratification is considered to be minimal if the concentration at each traverse point is within ± 10.0 % of the mean concentration value for all the points. The results are also acceptable if the concentration at each traverse point differs by no more than 5 ppm or 0.5% CO_2 or O_2 from the average concentration for all traverse points. If stratification is found to be minimal, the short RM measurement line may be used for the RATA tests.

The data and calculated results from all stratification tests are to be kept on file at the facility, available for inspection, with the rest of the RATA information.

References: Appendix A, Sections 6.5.6, 6.5.6.1, 6.5.6.2, and 6.5.6.3; 40 CFR Part 60, Appendix B (PS 2)

Key Words: RATAs, Reference methods, Scrubbers

History: First published in March 1997, Update #11; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 8.26 REVISED

Topic: Peaking Unit Annual Flow RATA

Question: Peaking units are only required to do an annual flow RATA at normal load. Must units meet the definition of a peaking unit in Part 72 in order to qualify for this reduced testing?

Answer: Yes. Report the peaking unit status in RT 507

References: Appendix B, Section 2.3

Key Words: Peaking units, Reporting

History: First published in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 8.27

Topic: Reference Flow-to-load Ratio

Question: For the quarter in which we do a flow RATA, should we use the data from that RATA for establishing the reference flow-to-load ratio for that same quarter or should we use data from the previous RATA?

Answer: Always base R_{ref} on the most recent normal load flow RATA, even if the RATA was performed in the quarter being evaluated. Note that for any quarter in which a normal load flow RATA is performed and passed, flow rate data recorded prior to the RATA may be excluded from the quarterly flow-to-load ratio data analysis. See Sections 2.2.5(a)(5) and 2.2.5(c)(5) of Appendix B.

References: Appendix B, Section 2.2.5

Key Words: Flow-to-load test, RATAs

History: First published in October 1999 Revised Manual

Question 8.28

Topic: QA Operating Quarter -- Calendar Quarter Deadline

Question: If we use the new definition of a QA operating quarter to claim exemptions from quarterly linearity checks or to extend RATA deadlines, will we have to start up

units just to do testing when we reach the calendar quarter deadlines (i.e., a linearity is required at least every four calendar quarters and a RATA is required at least every eight calendar quarters)?

Answer: No. In addition to the quarterly linearity check exemptions and RATA deadline extensions that may be claimed on the basis of non-QA operating quarters, there are also grace periods for missed tests. Grace periods allow required tests to be completed within a certain number of unit or stack operating hours after the end of the quarter in which the QA test was due. The two cases are as follows:

For linearity checks: Appendix B to Part 75 states in Section 2.2.3(f) that "If a linearity test has not been completed by the end of the fourth calendar quarter since the last linearity test, then the linearity test must be completed within a 168 unit operating hour or stack operating hour grace period...following the end of the fourth successive elapsed calendar quarter, or data from the CEMS (or range) will become invalid."

For RATAs: Appendix B to Part 75 states in Section 2.3.1.1(a) that "If a RATA has not been completed by the end of the eighth calendar quarter since the quarter of the last RATA, then the RATA must be completed within a 720 unit (or stack) operating hour grace period...following the end of the eighth successive elapsed calendar quarter or data from the CEMS will become invalid."

References: Appendix B, Sections 2.2.3 and 2.3.1.1

Key Words: Deadlines, Linearity, RATAs

History: First published in October 1999 Revised Manual

Question 8.29 REVISED

Topic: Time Per RATA Run

Question: For a Part 75 RATA, what is the minimum acceptable time per run?

Answer: Section 6.5.7 in Appendix A to Part 75 specifies that the minimum RATA run time is 21 minutes for a gas monitoring system or moisture monitoring system RATA and 5 minutes for a flow RATA. Note that the 21-minute run time for moisture system RATA appears to conflict with Sections 8.1.1.2 and 8.2.2 of EPA Reference Method 4 (RM4) in Appendix A of 40 CFR 60. On one hand, Section 8.1.1.2 of RM4 requires collection of a minimum sample volume of 21 scf at a rate no greater than 0.075 scfm, when regular Method 4 is used, which equates to a sampling time of 28 minutes. On the other hand, when Approximation Method 4 (midget impinger technique) is used, section 8.2.2 of RM 4 caps the sample volume at approximately 30 liters of gas, collected at a rate of 2 liters/min, which equates to a sample time of 15 minutes. The Acid Rain

Program allows either regular Method 4 or Approximation Method 4 to be used as the reference method for moisture RATA testing. Therefore, when RM 4 is used for Acid Rain Program applications, determine the appropriate sample collection time (21 minutes, 28 minutes, or 15 minutes) as follows:

(1) When regular Method 4 is used for a Part 75 moisture monitoring system RATA, the minimum acceptable time per RATA run is 21 minutes, as stated in Section 6.5.7 of Appendix A to Part 75. To meet this requirement, concurrent data must be collected with the CEMS and with the Method 4 sampling train for at least 21 minutes. The Method 4 sample collection time of 21 minutes, although less than the 28 minutes specified in Section 8.1.1.2 of Method 4, is consistent with Section 8.4.3.1 of Performance Specification No. 2 (PS No. 2) in Appendix B to 40 CFR 60, which states, in reference to reference method sampling for RATA applications, "...For integrated samples (e.g., Methods 6 and 4), make a sample traverse of at least **21 minutes**, sampling for an equal time at each traverse point...".

(2) When Approximation Method 4 is used for a Part 75 moisture monitoring system RATA, the minimum acceptable time for each RATA run is also 21 minutes. Collect the RM and CEMS data concurrently, with the understanding that in this case only the CEMS data can be collected for the full 21 minute period, because the recommended sampling time for Approximation Method 4 (as specified in Section 3.2.2 of Method 4) is about 15 minutes.

(3) When Reference Method 4 data are used for gas monitoring system RATAs, to correct pollutant and diluent concentrations for moisture, either perform the moisture sampling concurrently with the pollutant and diluent concentration measurements as described in (1) or (2), above, or follow the guideline in Section 6.5.7 of Appendix A to Part 75, which allows non-concurrent collection of the pollutant/diluent data and auxiliary data such as moisture, provided that for each RATA run, all necessary data are obtained within a 60 minute period. However, if the moisture data and the pollutant/diluent data are collected non-concurrently, the moisture sample collection time must be in accordance with Section 8.1.1.2 or 8.2.2 of Method 4, as applicable.

References: 40 CFR Part 60, Appendix A (RM 4, Sections 8.1.1.2 and 8.2.2), Appendix B (PS 2, Section 8.4.3.1); 40 CFR Part 75, Appendix A, Section 6.5.7

Key Words: RATAs, Reference methods

History: First published in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 8.30 RETIRED

Question 8.31

Topic: RATA Frequency

Question: If I usually do RATA testing in the second quarter but one year I use the grace period and do the RATA in the third quarter, should I do the next RATA in the second or third quarter the following year? (The unit operates more than 168 hours each quarter and the RATA results allow an "annual" frequency.)

Answer: You should do the next RATA in the second quarter (see Appendix B, Section 2.3.3(c)). The grace period cannot be used to extend the deadline for the next required QA test.

References: Appendix B, Section 2.3.3(c)

Key Words: RATAs

History: First published in March 2000, Update #12

Question 8.32

Topic: SO_2 RATA Exemption

Question: Our facility can burn #6 oil but doesn't -- we burn only natural gas. Can we take advantage of the SO_2 RATA exemption?

Answer: Yes. You may claim either: (1) an on-going exemption from SO_2 RATAs if your Designated Representative certifies that you never burn fuel with a sulfur content higher than "very low sulfur fuel" (as defined in § 72.2); or (2) a conditional exemption from SO_2 RATAs if you keep the usage of oil to 480 hours or less per year. In EDR v2.1/2.2, RT 697 is used to make these types of claims.

References: § 75.21(a)(9)

Key Words: RATAs

History: First published in March 2000, Update #12

Question 8.33 RETIRED

Question 8.34

Topic: Range of Operation

Question: The range of operation as defined in Section 6.5.2.1 of Appendix A to Part 75 extends from the "minimum safe, stable load" to the "maximum sustainable load." What is meant by the "minimum safe, stable load"?

Answer: The minimum safe, stable load is not precisely defined in either Part 72 or Part 75 of the Acid Rain rules. In the absence of such a definition, use the following guidelines: the minimum safe, stable load is the lowest load at which a unit is capable of being held for an extended period of time, without creating an unsafe or unstable operating condition. If the boiler manufacturer recommends that the unit not be operated below a certain load level, this may be used as the minimum safe, stable load. If such a recommendation is unavailable, you may use sound engineering judgment, based on a knowledge of the historical operation of the unit, to estimate the minimum safe, stable load. In making this determination, you may exclude low unit loads recorded during startup or shutdown while the unit is "ramping up" or "ramping down," unless these loads are able to be sustained and safely held for several hours at a time.

References: Appendix A, Section 6.5.2.1(b)

Key Words: Flow monitoring

History: First published in March 2000, Update #12

Question 8.35

Topic: Load Analysis

Question: The historical load analysis described in Appendix A, Section 6.5.2.1(c) requires us to use the "past four representative operating quarters" in the analysis. Does this refer to complete calendar quarters only, or can we use a calendar year of data (365 days) that begins and ends in the middle of a quarter? If we perform the analysis in the fourth quarter of the year, can we simply use the data from the time we perform the analysis back to the beginning of that calendar year?

Answer: The historical load analysis must include the four most recent *complete* operating quarters that represent typical operation of the unit. If you perform the analysis in the middle of a quarter, you may include data from the current quarter; however,

the historical look back must include load data from the previous four complete, representative operating quarters. In some cases, a facility may need to consider more than the past four quarters of data to identify four complete operating quarters that are representative of typical operation.

References: Appendix A, Section 6.5.2.1(c)

Key Words: RATAs, Recordkeeping

History: First published in March 2000, Update #12

Question 8.36

Topic: Relative Accuracy and BAF Calculations -- Rounding Conventions

Question: When performing the bias test described in Section 7.6.5 of Appendix A or when calculating the percentage relative accuracy (% RA) or bias adjustment factor (BAF) for a CEMS, should we use in our calculations the rounded values of the "Arithmetic Mean of CEMS values," "Arithmetic Mean of Reference Method Values," "Arithmetic Mean of the Difference Data," "Standard Deviation of Difference Data," and "Confident Coefficient," as reported, respectively, in columns 35, 48, 61, 74, and 87 of EDR RT 611?

Answer: No. The parameters reported in columns 35 through 87 of RT 611 are intermediate values in a calculation sequence that leads to final values of percent relative accuracy (% RA) and the BAF. These intermediate values are rounded off to three decimal places, solely for EDR reporting purposes. The rounded values should not be used to perform the bias test or to calculate the % RA or the BAF. Rather, when performing the bias test or when calculating the relative accuracy and the BAF, you should retain the maximum decimal precision supported by the computer used (a minimum of seven decimal places) in all of the intermediate parameters. This is in keeping with accepted professional standards and practice. (For example, American Society for Testing and Materials (ASTM), "Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications," #E29-90, Section 7.3, states "When calculating a test result from test data, avoid rounding intermediate quantities. As far as practicable with the calculating device or form used, carry out calculations with the test data exactly and round only the final result.") The use of rounded intermediate quantities in a calculation sequence is likely to produce cumulative rounding errors.

References: Appendix A, Section 7.6.5; Revised EDR Version 2.1 Reporting Instructions

Key Words: Bias adjustment factor, Relative accuracy, Rounding conventions

History: First published in December 2000, Update #13

Question 8.37 REVISED

Topic: RATAs of Multiple Stack Configurations

Question: For a unit with a multiple stack configuration, are RATAs of the monitors on the individual stacks required to be done simultaneously?

Answer: For multiple stack configurations, Part 75 does not require simultaneous RATAs of the monitors installed on the individual stacks. However, if you elect to perform the quarterly flow-to-load test on a combined basis (see questions 3.38 through 3.42), EPA recommends that the flow RATAs either be done simultaneously or as close in time as practicable, at approximately the same operating conditions (e.g., load, diluent concentration, etc.). This helps to ensure that a representative reference flow-to-load ratio is obtained.

References: Appendix A, Section 6.5; Appendix B, Section 2.2.5; Policy Manual Questions 3.38. 3.39, 3.40, 3.41 and 3.42

Key Words: Flow-to-load test, Multiple stacks, RATA

History: First published in December 2000, Update #13; revised in October 2003 Revised Manual

Question 8.38 NEW

Topic: RATAs for Time-shared Systems

Question: If the source has a time-sharing continuous emissions monitoring system (CEMS) which alternates sampling between two or more emission points, should the RATA be performed with the CEMS in time-share mode?

Answer: Yes. Because it is not possible to detect system bias introduced by the time-share process when the CEMS is not in the time-share mode, the RATA should be performed while the system is in time-share mode. There are two options available to determine the CEMS emission average while performing the RATA in time-share mode: 1) the runs can be 21 minutes long and the CEMS average computed from whatever data is recorded by the CEMS for the emission point tested during the 21 minutes; or 2) the runs can be extended up to one hour to capture two or more CEMS sampling cycles for the emission point being tested.

Question: Does the reference method have to be performed simultaneously at each of the emission points being monitored by the time-shared CEMS?

Answer: No. Although a RATA should be performed for each of emission points being monitored by a time-shared CEMS, only one emission point needs to be sampled by the reference method at a time.

Question: How should RATA and CEMS data be collected for the RATA calculations when testing time-shared CEMS?

Answer: When conducting separate RATAs for each emission point which time-share a CEMS, for each run period, separate the CEMS data generated for the emission point being challenged from the data collected by the system for any other emission point. For each run, compare the average concentration value from the CEMS at the challenged emission point to the average Reference Method value.

When simultaneously conducting RATAs at multiple emission points which time-share a CEMS, separate the CEMS data collected by emission point, and match that data to the respective Reference Method data collected at each emission point. For each respective run, compare the average CEMS concentration value to the corresponding average Reference Method value.

References:

Key Words: RATAs, Time sharing

History: First published in October 2003 Revised Manual

Question 8.39 NEW

Topic: Use of Multi-hole Sampling Probes

Question: Is the use of a multi-hole sampling probe permitted when conducting the RATA for an SO_2, NO_x, CO_2, or O_2 monitoring system, in lieu of physically moving a sampling probe to capture data at the required traverse points?

Answer: EPA intends to permit only certain configurations of multi-hole sampling probes to be used to conduct Part 75 RATAs, as discussed below under "Multi-hole Probes (EPA Evaluation)."

A. Background

For relative accuracy test audits (RATAs) of gas monitors, Part 75, Appendix A, § 6.5.6 defines the number and location of the required reference method sampling points. In general, three sampling points are used, unless the unit qualifies to use a single reference method point, as described in Appendix A, § 6.5.6(b)(4).

Sampling at multiple traverse points is usually necessary in a RATA, to ensure that the reference method results are representative of the average pollutant or diluent gas concentration in the flue gas stream and are not biased by any stratification that may exist within the flue. Then, if the CEMS passes the RATA, this confirms that the location of the CEMS sampling probe is appropriate and that the CEMS will provide data representative of the average flue gas concentration.

The procedure for collecting the required reference method data during a gas RATA is to physically move the sample probe from traverse point to traverse point. The sampling rate is kept constant at each point, and each point is sampled for a set amount of time at each point (usually 7 minutes) so that the volume of sample collected from each traverse point is equivalent to the next. The resultant value is a representative average of the pollutant or diluent gas concentration across the stack and is recorded as the run value. Probe movement can be accomplished by having a person manually move the probe during the testing or by using a mechanically automated probe, which is pre-programmed to sample at the specified traverse points sequentially.

Owners and operators have requested that EPA allow the use of multi-hole sampling probes for gas monitor RATAs, in lieu of physically moving the sampling probe as described above. Multi-hole sampling probes may serve to reduce the cost associated with RATA testing as well as to reduce the exposure time of the test personnel to the potentially hazardous conditions that may exist during RATA testing. However, as discussed in detail below, EPA has serious reservations concerning the ability of certain multi-hole probe configurations to provide representative measurements.

B. Types of Multi-hole Probes

EPA is aware of the following configurations of multi-hole sampling probes:

(1) Rake Probe: Multi-hole sampling probe configuration that consists of a single axial pipe serving as the probe, and which has multiple openings along its length through which a sample is drawn. This configuration is designed to sample multiple points simultaneously.

(2) Concurrent Sampling Bundle Probe (CSBP): Multi-hole sampling probe configuration that consists of multiple distinct sampling tubes bundled together into one probe system. Each sampling tube is of a different length to sample at one of the required traverse points. During a test run the sample is drawn through all of the tubes simultaneously and is combined into one composite sample prior to analysis. The gas flow rate through each tube could be monitored to assure that each traverse point is being sampled at an equivalent rate.

(3) Discrete Sampling Bundle Probe (DSBP): Multi-hole sampling probe configuration that consists of multiple distinct sampling tubes bundled

together into one probe system. Each sampling tube is of a different length to sample at one of the required traverse points. During a test run, the sample is drawn through each of the distinct sampling tubes, one at a time.

C. Multi-hole Probes (EPA Evaluation)

EPA approves, without petition, the use of discrete sampling bundle probes, as described above, for Part 75 RATA testing. This configuration typically has three or more sampling tubes bound together to form one probe bundle. The sample tube positions are often adjustable in order to be applicable to various stack diameters. In this configuration each sampling tube is sampled individually, as controlled by a valve arrangement, and is analogous to the physical traversing of a stack with a probe. The total sample flow rate can be monitored and controlled at each point during the test to ensure that the volume of sample collected from each traverse point is equivalent to the next.

For sources that wish to use either the rake probe or concurrent sampling bundle probe configurations, the designated representative (or authorized account representative) should submit a petition to the Director of the Clean Air Markets Division (CAMD) under § 75.66. CAMD will then determine whether the petition should be approved. However, note that:

- EPA is not likely to approve the use of rake probes, as described in this policy, for Part 75 RATA testing. The representativeness of the samples taken using a rake probe is dependent on properly balancing the sample flow rates through each hole, so that an equal volume of sample is collected from each point. This balance is affected by the sizing of each hole, overall-sampling rate, and the specific flue gas characteristics of the stack matrix that is to be sampled. Flue gas characteristics that can affect this balance include molecular weight, temperature, pressure, and moisture content. In addition, any change to the diameter of the openings caused by plugging during a test may alter the sampling rate balance, possibly leading to collection of a non-representative sample. Furthermore, to date, EPA is not aware of any quality assurance procedures that could be monitored during the test to ensure that equivalent sample volumes are collected at each traverse point and therefore ensure a representative sample is collected. Without such assurance, EPA does not believe that the rake probe configuration is suitable for Part 75 RATA testing.

- EPA is also unlikely to approve the use of concurrent sampling bundle probes, as described above, for Part 75 RATA testing without quality assurance procedures that could be monitored during the test to ensure that equivalent sample volumes are collected at each traverse point.

Finally, the Agency notes that although approval of a petition to use a rake probe or a concurrent sampling bundle probe for Part 75 RATA testing is unlikely, as indicated above, this guidance does not represent EPA's final determination of

whether a particular multi-hole probe configuration is approvable. Any petition that either follows or departs from this guidance will be considered on its own merits.

References: Appendix A, Section 6.5.6

Key Words: RATAs, Sampling location

History: First published in October 2003 Revised Manual

SECTION 9
BIAS

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Question 9.1 REVISED

Topic: RATA Testing Frequency Limitation -- Bias Adjustment

Question: In Appendix B, how many tests are allowed to reduce the bias adjustment factor?

Answer: Whereas the original Part 75 rule limited the owner or operator to two RATA attempts to obtain a more favorable relative accuracy percentage or bias adjustment factor (BAF), Section 2.3.1.4 in Appendix B of the revised rule (May 26, 1999) allows as many RATA attempts as are needed to obtain the desired % RA or BAF. The only condition is that the data validation procedures in Section 2.3.2 of Appendix B must be followed.

References: Appendix A, Section 7.6.5

Key Words: Bias, Frequency incentives, RATAs

History: First published in Original March 1993 Policy Manual; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 9.2

Topic: Bias Test -- Retesting

Question: Section 75.61(a)(1)(iii) allows the owner or operator to retest immediately, without notification, in cases of a failed certification test. Does this apply in the case of bias tests as well as RATAs? Are there any restrictions as to how soon retesting should commence?

Answer: If a certification test results in a requirement that a bias adjustment factor be used, then the owner or operator of the affected unit may retest immediately. EPA does not intend to place restrictions on the timing of retests performed in order to eliminate the need for the use of a bias adjustment factor. In many cases, the failure of a bias test will be known when stack testing personnel are still on site, and requiring a pretest notification for testing performed to improve bias test results would cause needless and costly delays in the testing.

References: § 75.61(a)(1)(iii)

Key Words: Bias, Notice

History: First published in Original March 1993 Policy Manual; revised in October 1999 Revised Manual

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SECTION 10
SPAN, CALIBRATION, AND LINEARITY

Page

Question 10.1 REVISED

Topic: Span

Question: If the maximum potential SO_2 concentration, when multiplied by 1.25 (rounded up to the nearest 100 ppm), equals a span value of 3,100 ppm, would the source be allowed to use a full-scale range value of 3,000 ppm and if so, what value would the gas cylinder concentrations be based on?

Answer: In the example cited, the full-scale range may not be set at 3,000 ppm, because Section 2.1.1.3 in Appendix A to Part 75 states that the owner or operator must "select the full-scale range of the instrument to be consistent with section 2.1 of this appendix and to be greater than or equal to the span value." Thus, using a monitor with a full-scale range of 3,000 ppm (i.e., 100 ppm less than the calculated span value) is not acceptable. For a span value of 3,100 ppm, the minimum acceptable full-scale range is 3,100 ppm.

Note: In Part 75, the method of calculating the SO_2 span value is to multiply the maximum potential concentration (MPC) by a multiplier anywhere in the range from 1.00 to 1.25. Therefore, in the present example, if a span value of 3,000 ppm could be obtained by using an allowable multiplier, the full-scale range could be set at 3,000 ppm.

The required cylinder gas concentrations for daily calibration error tests and linearity checks are always determined in the same way (i.e., as percentages of the span value), in accordance with Section 5.2 of Appendix A.

References: Appendix A, Sections 2.1.1.3 and 5.2

Key Words: Calibration gases, Span

History: First published in Original March 1993 Policy Manual; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 10.2 REVISED

Topic: Zero Air Material

Question: What is zero air material?

Answer: Zero air material is a calibration gas that may be used to zero an SO_2, NO_x or CO_2 analyzer. Zero air material has an effective concentration of 0.0% of the span value for the component being zeroed, and is free of certain other interfering gaseous species. Zero air material may be used for calibration error checks in lieu of a "zero-level" EPA Protocol gas (i.e., a gas standard with a concentration

> 0.0%, but ≤ 20% of the span value for the gaseous component of interest -- see Question 10.39). According to 40 CFR § 72.2, zero air material includes the following:

(1) A calibration gas certified by the gas vendor not to contain concentrations of SO_2, NO_x, or total hydrocarbons above 0.1 parts per million (ppm), a concentration of CO above 1 ppm or a concentration of CO_2 above 400 ppm; or

(2) Ambient air conditioned and purified by a CEMS for which the CEMS manufacturer or vendor certifies that the particular CEMS model produces conditioned gas that does not contain concentrations of SO_2, NO_x, or total hydrocarbons above 0.1 ppm, a concentration of CO above 1 ppm, or a concentration of CO_2 above 400 ppm; or

(3) For dilution-type CEMS, conditioned and purified ambient air provided by a conditioning system concurrently supplying dilution air to the CEMS; or

(4) A multicomponent mixture certified by the supplier of the mixture that the concentration of the component being zeroed is less than or equal to the applicable concentration specified in paragraph (1) of this definition, and that the mixture's other components do not interfere with the CEM readings.

Option (1) above describes a gaseous standard that is certified by the vendor not to contain the gaseous components listed (i.e., SO_2, NO_x, THC, CO, and CO_2) at concentrations exceeding the levels specified in the zero air material definition. A cylinder of high purity air meeting this requirement may be used as a universal zero standard for SO_2, NO_x or CO_2 analyzers (but obviously not for O_2 analyzers, since air contains 20.9% oxygen -- see Question 10.3).

Option (2) allows the use of ambient air purified by a CEMS air clean-up system, where the CEM vendor provides a certification statement that the system design (which must include adequate quality assurance and quality control procedures) ensures that the purified ambient air used for the zero-level check will meet the specifications in the zero air material definition. Then, as long as the owner or operator implements the identified QA/QC procedures, purified ambient air may be used as a zero air material for SO_2, NO_x, or CO_2 analyzers.

Option (3) allows purified dilution air from a conditioning system to be used to zero a dilution-extractive type SO_2, NO_x , or CO_2 monitor. This option does not require the same level of certification as Option (1) or (2), since any background concentrations of the component being zeroed (or any potential interfering compounds) are also present during normal emission measurements. This effectively "zeros-out" any background effects. However, the dilution air purification system should be maintained and operated according to the manufacturer's instructions.

Finally, Option (4) allows you to use a multi-component gas mixture as zero air material[1], provided that:

(1) The concentration of the component being zeroed is certified by the vendor not to exceed the level specified in the zero air material definition; and

(2) None of the other components of the mixture is known to interfere with the analysis of the component being zeroed.

To facilitate the implementation of Option (4), you may assume that a multi-component EPA Protocol gas mixture is suitable for use as a zero air material if:

3. The component being zeroed is not listed as a component of the gas mixture on the vendor's calibration gas certificate; or

4. The component being zeroed is listed, its concentration does not exceed the level specified in the zero air material definition; and

5. None of the other components of the mixture is known to interfere with the analysis of the component being zeroed.

For example, if you have a NO_x-diluent monitoring system consisting of a NO_x analyzer and a CO_2 analyzer, you may use a NO_x Protocol gas standard consisting of NO_x in nitrogen to zero the CO_2 analyzer, if:

(6) The certificate supplied by the vendor indicates either that CO_2 is not a component of the mixture or that the CO_2 concentration in the mixture is $\leq$ 400 ppm; and

(7) Neither NO_x nor N_2 is known to interfere with the CO_2 measurements.

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References: § 72.2, Question 10.3

Key Words: Calibration gases

History: First published in May 1993, Update #1; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

[1] Note that for Protocol gas mixtures, the term "zero air material" is something of a misnomer. Such mixtures generally consist of pollutant or diluent gaseous species in an inert balance gas, which in some instances is air (e.g., SO_2 in air), but often is *not* air (e.g., NO_x in nitrogen).

Question 10.3

Topic: Daily Calibration Test -- Zero-level Check

Question: Must a zero air material be used to perform the zero check required as part of the daily calibration test under Part 75?

Answer: Qualified no. A utility is only required to use a calibration gas that provides a zero-level *concentration* as specified by 40 CFR Part 75, Appendix A, Sections 5.2.1 and 6.3.1. A zero-level concentration can be anywhere from 0.0% to 20.0% of the span value. Therefore, a zero air material is not required unless the selected zero-level concentration is 0.0% of span. When the selected zero-level concentration is 0.0% of span, a zero air material that meets the revised definition in § 72.2 must be used (see Question 10.2). Note that under the revised definition, a zero air material may be an EPA Protocol gas mixture that does not contain the component being zeroed. For instance, a Protocol gas containing 200 ppm NO in N_2 could be used to provide a zero-level concentration for an SO_2 pollutant concentration monitor.

References: Appendix A, Sections 5.1.6, 5.2.1, and 6.3.1; Appendix B, Section 2.1.1

Key Words: Calibration gases

History: First published in May 1993, Update #1; revised July 1995, Update #6; revised in October 1999 Revised Manual

Question 10.4

Topic: Calibration Gases

Question: May I use my calibration gas from daily calibration error tests for a quarterly linearity check?

Answer: Yes. The same cylinder of calibration gas used for daily calibration error tests may be used for a quarterly linearity check.

References: Appendix A, Section 6.2; Appendix B, Section 2.2.1

Key Words: Calibration gases, Linearity

History: First published in May 1993, Update #1; revised July 1995, Update #6; revised in October 1999 Revised Manual

Question 10.5

Topic: Calibration Error Test -- Differential Pressure Flow Monitors

Question: How should differential pressure flow monitors perform the calibration error test (Part 75, Appendix A, Section 2.2.2.1)?

Answer: In part, Appendix A, Section 2.2.2.1 states: "Design and equip each flow monitor to allow for a daily calibration error test consisting of at least two reference values: (1) Zero to 20% of span *or an equivalent reference value (e.g., pressure pulse or electronic signal)* and (2) 50 to 70% of span" (emphasis added). For differential pressure flow monitors, the above quote means that the 7-day and daily calibration error tests may be performed in units of Δ P (e.g., inches of water).

For initial certification or recertification of a differential pressure-type flow monitor, the allowable calibration error (in inches of H_2O) in a 7-day calibration error test is therefore 3.0% of the "calibration span value" (i.e., the Δ P value that is equivalent to the velocity span value (in wet, standard ft/min) from Section 2.1.4 of Appendix A to Part 75). The results are also acceptable if the absolute value of the difference between the flow monitor response and the reference signal value (i.e., $|R - A|$ in Equation A-6) does not exceed 0.01 in. H_2O.

The control limits for daily operation of a differential pressure-type flow monitor are $\pm$ 6.0% of the calibration span value (see Section 2.1.4 of Appendix B). The results of a daily calibration error test are also considered acceptable if the absolute value of the difference between the monitor response and the reference signal value does not exceed 0.02 inches H_2O.

References: Appendix A, Sections 2.1.4 and 2.2.2.1

Key Words: Calibration error, Differential pressure flow monitors

History: First published in November 1993, Update #2; revised in October 1999 Revised Manual

Question 10.6 RETIRED

Question 10.7

Topic: Daily Calibration Test and Validation of Emissions Data

Question: What are the requirements of Part 75 and what is EPA's policy on validation of emissions data if a daily calibration test was not performed during a calendar day in which a unit shuts down?

Answer: See Question 10.13, which discusses the data validation requirements of Part 75 pertaining to daily calibration error tests and provides supplementary policy guidance.

References: Appendix B, Section 2.1.5

Key Words: Calibration error, Reporting

History: First published in November 1994, Update #4; revised March 1995, Update #5; revised in October 1999 Revised Manual

Question 10.8 REVISED

Topic: Requirements Resulting from Span Changes

Question: If I change the span value for a unit or common stack, how do I notify EPA of the change? What hardware tests should I perform and report for instruments if the span changes and if span changes affect the range of the instrument?

Answer: When you change the span associated with a unit or common stack you must submit a revised monitoring plan in electronic format to EPA Headquarters as part of the appropriate quarterly report. Periodic evaluation of the reported emissions data is required (once a year, at a minimum), to ensure that the current span and range values are still appropriate (see Appendix A, Sections 2.1.1.5, 2.1.2.5, 2.1.3.2, and 2.1.4.3). If a span change is necessary, it must be made within 45 days of the end of the quarter in which the need to change the span is identified, except that up to 90 days after the end of the quarter are allowed in cases where the span change requires new calibration gases to be ordered.

Submit the electronic record of each span change to EPA Headquarters in RT 530, in the report for the quarter in which the change is made.Also report in RT 530 any range adjustment associated with the span change. EPA requests that utilities clearly identify the effective date of the change in span in RT 530. EPA may require resubmittal of quarterly reports and may require reported emission data to be replaced with substitute data if the span value in the monitoring plan does not agree with the span values used and reported as the basis for daily calibration and linearity checks.

Note that Part 75 sometimes requires monitoring plans to be submitted outside of the quarterly report (e.g., the initial monitoring plan for a new unit). The Agency currently provides two mechanisms for making these submittals: (1) an E-mail process; and (2) a computerized procedure, called MDC-FTP, both of which allow sources to submit revised electronic monitoring plans to EPA at any time (see Question 12.30 for a further discussion of these processes).

Whenever making a change to the span value, perform a diagnostic linearity check for gas concentration monitors (unless the span change is not great enough to require new calibration gases to be ordered) and perform a calibration error test for flow monitors. Use the data validation procedures in § 75.20(b)(3) for these diagnostic tests.

Some types of modifications to the monitor resulting from span and range adjustments will require full recertification of the CEMS. For example, if the measurement cell is changed, or the reference filters are changed in an NDIR type of component, a complete set of recertification tests is required.

References: § 75.20(b)(3); Appendix A, Sections 2.1.1.5, 2.1.2.5, 2.1.3.2, and 2.1.4.3

Key Words: Monitoring range, Reporting, Span, Reporting

History: First published in November 1994, Update #4; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 10.9 RENUMBERED AS QUESTION 14.30

Question 10.10

Topic: Rounding Conventions for NO_x and SO_2 Span

Question: When a particular utility measured its NO_x emissions, the concentration was between 70 ppm and never was higher than 247 ppm. One hundred twenty five percent of this value (i.e., of 247 ppm) gives a span concentration of 309 ppm. Appendix A would appear to require the span concentration to be rounded up to 400 ppm. However, the monitor range is 375 ppm. May the utility round up the span concentration to the nearest 10 ppm (310 ppm) instead of the nearest hundred ppm for such a low maximum potential concentration (MPC)?

Answer: Yes. The original Part 75 rule had required the span concentration to be rounded upward to the next highest multiple of 100 ppm, to obtain the span value. However, this was based upon the assumption that the MPC would be at least 400 ppm. Because this is not always true, subsequent revisions to Part 75 have

clarified that when the span concentration is ≤ 500 ppm, rounding upward to the next highest multiple of 10 ppm is acceptable.

References: Appendix A, Sections 2.1.1.3 and 2.1.2.3

Key Words: NO_x monitoring, SO_2 monitoring, Span

History: First published in March 1995, Update #5; revised in October 1999 Revised Manual

Question 10.11

Topic: Reporting Requirements for Calibrations

Question: A CEM performs multiple calibration error tests in one day. May the utility simply report any failed tests and the last test and omit other passed tests?

Answer: No. Report <u>all</u> daily calibration error test results in time order.

References: § 75.59, § 75.64; Appendix B, Sections 2.1.1 and 2.1.6

Key Words: Calibration error, Quality assurance, Reporting

History: First published in March 1995, Update #5; revised in October 1999 Revised Manual

Question 10.12

Topic: Calibration of Oil Flowmeters

Question: Has EPA approved any alternatives to ASME MFC-9M, "Measurement of Liquid Flow in Closed Conduits by Weighing Method" in calibration of Appendix D oil flowmeters?

Answer: Yes. The original January 11, 1993 version of Appendix D specified only one method, ASME-MFC-9M, by which to calibrate an oil flowmeter. Since then, EPA has revised Appendix D several times. Included among these revisions has been the incorporation of a number of alternative procedures for oil fuel flowmeter calibration. Specifically, the following alternative procedures have been incorporated by reference into Section 2.1.5.1 of Appendix D, and may be used as applicable to the type of flowmeter being calibrated: (1) ASME MFC-3M-1989, with September, 1990 Errata ("Measurement of Fluid Flow in Pipes, Using Orifice, Nozzle and Venturi"); (2) ASME-MFC-5M-1985 ("Measurement of

Liquid Flow in Closed Conduits Using Transit-Time Ultrasonic Flowmeters"); (3) ASME MFC-6M-1987, with June, 1987 Errata ("Measurement of Fluid Flow in Pipes Using Vortex Flow Meters"); (4) ISO 8316: 1987(E) "Measurement of Liquid Flow in Closed Conduits–Method by Collection of the Liquid in a Volumetric Tank"; and (5) American Petroleum Institute (API) Section 2, "Conventional Pipe Provers" and API Section 5, "Master-Meter Provers", from Chapter 4 of the Manual of Petroleum Measurement Standards, October, 1988 (Reaffirmed, 1993).

In addition to these regulatory alternatives, EPA has approved an NIST traceable Standing Start Finish weighing method as a specific alternative to ASME MFC-9M, in response to a petition under § 75.66.

ASME MFC-9M, a static weighing method, is a fuel flowmeter calibration method that compares the mass flow through a flowmeter to mass measured by a NIST approved scale.

The Standing Start Finish weighing method can be used in calibration of fuel oil flowmeters because:

(1) Both ASME MFC-9M and Standing Start Finish methods use weight tank systems calibrated using NIST approved equipment.

(2) Both ASME MFC-9M and Standing Start Finish methods account for the difference in the buoyancy of air exerted in the fluid mass.

The two methods differ only in that ASME MFC-9M utilizes a diverter valve and manual timing systems, while the Standing Start Finish method uses an automatic internal quartz clock and a digital totalizer. In either case, the scale is verified regularly using NIST standards.

If a unit uses the method above, the utility must notify EPA of the procedures and equipment being used at a particular unit as part of the certification application.

If EPA approves other alternative oil flowmeter calibration methods, the Agency will update this question and answer.

References: § 75.66(c); Appendix D, Sections 2.1.5.1

Key Words: Calibration error, Excepted methods, Oil-fired units

History: First published in March 1995, Update #5; revised in October 1999 Revised Manual

Question 10.13

Topic: Daily Calibration Error Test -- Data Validation

Question: What is EPA's policy on validation of emissions data based on the daily calibration error test?

Answer: The following paragraphs summarize the provisions of Part 75 pertaining to data validation for daily calibration error tests (see Appendix B, Sections 2.1 through 2.1.5) and provide supplementary policy guidance for the implementation of those provisions.

Part 75 Rule Provisions

General Provisions: Daily calibration error tests of each continuous monitor used to report data under Part 75 are required. Additional calibration error tests are required whenever: (1) a calibration error test is failed; (2) a monitor returns to service after corrective maintenance or repair; and (3) following certain allowable calibration adjustments (see Section 2.1.3 of Appendix B).

A passed daily calibration test *prospectively* validates data from a continuous monitor for 26 clock hours (24 hours plus a 2-hour grace period), unless another calibration test is failed within that period. Therefore, in order to report quality-assured data from a monitor, the data must be obtained within the 26 hour data validation window of a prior, passed daily calibration error test. Once a 26 hour data validation window has expired, data from the monitor are considered invalid until a subsequent calibration error test is passed. The only exception to this general rule is a grace period allowed for start up events (see discussion of grace period, below).

When a daily calibration test is failed, the data from that monitor are prospectively invalidated, beginning at the time of test failure and ending when a subsequent daily calibration test is passed.

On-line vs. Off-line Calibration: The basic requirement of Part 75 is that calibration error tests must be done on-line (i.e., with the unit operating), at typical operating conditions (see Section 2.1.1.1 of Appendix B). However, if a monitor is able to pass an off-line calibration error test demonstration in accordance with Section 2.1.1.2 of Appendix B, then the limited use of off-line calibration error tests for data validation is permitted for that monitor. Note that even if a monitor passes the off-line calibration demonstration, on-line calibration error tests of the monitor are still required, at a minimum, once every 26 unit operating hours.

Startup Grace Period: For a monitor that is not able to qualify to use an off-line calibration error test to validate data, an 8-hour startup grace period is available. To qualify for a startup grace period, there are two requirements:

(1) Following an outage of one or more hours, the unit must be in a startup condition and a startup event must have begun, as evidenced in RT 300 by a change in unit operating time from zero in one clock hour to a positive unit operating time in the next clock hour.

(2) For the monitor used to validate data during the grace period, an **on-line** calibration error test of the monitor must have been completed and passed no more than 26 clock hours prior to the unit outage.

If both of the above conditions are met, then a startup grace period of up to 8 clock hours is allowed before an on-line calibration error test of the monitor used to validate data during the grace period is required. During the startup grace period, data generated by the CEMS are considered valid. A startup grace period ends when either: (1) an on-line calibration error test of the monitor is completed; or (2) 8 clock hours have elapsed from the beginning of the startup event, whichever occurs first.

Supplementary Policy Guidance

Use the following additional guidelines to implement the calibration error provisions of Part 75:

(1) A valid calibration error test consists of a set of consecutive, passing zero and upscale calibrations performed within the same clock hour or adjacent clock hours.

(a) Do not report a partial calibration error test unless the partial test fails to meet the calibration error specification, in which case, treat it as a failed test.

(b) If either the zero or upscale portion of a *completed* calibration error test fails, the monitor is considered to be out-of-control at the time of failure of the zero or upscale calibration.

(2) If more than one zero or upscale calibration is reported in a given clock hour, report the calibrations in time order (the order in which the calibrations were conducted).

(3) A passed calibration error test may be used to *prospectively* validate data for the hour in which it is performed only if, after completion of the test, the minimum data requirements of § 75.10(d)(1) are met for the clock hour (i.e., following the calibration error test, at least one valid data point is obtained in each of two (or more) 15-minute quadrants of the hour).

(4) A passed calibration error test may not be used to validate data if the monitor is out-of-control with respect to any of its required quarterly, semiannual or annual quality assurance tests.

(5) When a significant change is made to a monitoring system or when a monitor is repaired and additional recertification or diagnostic tests are required to demonstrate that the monitor is back in-control, a passed calibration error test may, in accordance with the provisions of § 75.20(b)(3), be used as a "probationary calibration error test" to initiate a period of "conditionally valid data" (see definitions in § 72.2) until the required recertification or diagnostic tests are completed. [See also similar provisions in § 75.20(d) and Section 2.2.5.3 of Appendix B].

(6) A start-up event that commences within the grace period of a previous start-up event does **not** qualify for a grace period of its own. In addition, the hours of unit downtime prior to the second startup event count toward the 8-hour grace period total (see Example 10, below).

(7) In certain instances, one or more clock hours within the 8-hour window of a start-up grace period may coincide (overlap) with clock hours that are within a 26-hour window associated with a previous on-line calibration error test. In such instances, CEM data validation is governed by whichever window (i.e., the 8-hour grace period or the 26-hour calibration window) expires **last** (see Example 10, below).

DETAILED EXAMPLES

The following examples illustrate data validation for **on-line** calibration error tests and the use of a start-up grace period. The examples assume that for the hour in which a calibration error test is passed, sufficient valid data are collected *after* the calibration error test to validate data for that hour. In other words, the hour in which the calibration error test is passed is considered to be the first hour in the 26 clock hour window of data validation associated with the calibration error test.

KEY FOR EXAMPLES:

P - The monitor passed a particular zero or upscale calibration

F - The monitor failed a particular zero or upscale calibration

Y - Yes, the monitor passed the calibration error test

N - No, the monitor failed the calibration error test

In examples 1 through 5 below, assume that the unit has been operating for some time, and that on **Day 1** a daily calibration was **passed** at **7** am, (validating data from Day 1, hour 7 through Day 2, Hour 8, and that no calibration error test is failed in that interval).

EX#	DAY	HOUR	ZERO	HIGH	PASSED TEST?	DATA VALIDATION STATUS
1.	Day 2	Hour 7	P	P	Y	**VALID** (C.E. Test passed) Day 2 Hr 7 thru Day 3 Hr 8
2.	Day 2	Hour 7	P			**VALID** (within 26-hr window)
		Hour 8		P	Y	**VALID** (C.E. Test passed) Day 2 Hr 8 thru Day 3 Hr 9
3.	Day 2	Hour 7	F		N	**INVALID** (C.E. Test Failed)
		Hour 8	P			
		Hour 8		P	Y	**VALID** (C.E. Test passed) Day 2 Hr 8 thru Day 3 Hr 9
4.	Day 2	Hour 7	F		N	**INVALID** (C.E. Test Failed)
		Hour 8	P			
		Hour 8	F	N		
		Hour 8	P	N		**INVALID** *(note: injections must be passed consecutively)*
5.	Day 2	Hour 7	P			**VALID** (within 26-hr window)
		Hour 8		P	Y	**VALID** (C.E. Test passed) Day 2 Hr 8 thru Day 3 Hr 9
	Day 3	Hour 7	--	--	--	**VALID** (within 26-hr window)
		Hour 8	--	--	--	**VALID**
		Hour 9	--	--	--	**VALID**
		Hour 10	--	--	--	**INVALID** (26 hr window expired)
		Hour 11	--	--	--	**INVALID**
		Hour 12	P			**INVALID**
		Hour 13		P	Y	**VALID** (C.E. Test passed) Day 3 Hr 13 thru Day 4 Hr 14
	Day 4	Hour 7	F		N	**INVALID** (C.E. Test Failed)
		Hour 8	P			
		Hour 8		P	Y	**VALID** (C.E. Test passed) Day 4 Hr 8 thru Day 5 Hr 9

Assume for examples 6 through 10, below that the unit has been off-line for several days, that the last on-line calibration error test was passed 18 hours before the hour of unit shutdown, and that the unit begins operation on Day 1 at 1:01 am, during Hour 1. The unit therefore qualifies for a start-up grace period:

EX#	DAY	HOUR	ZERO	HIGH	PASSED TEST?	DATA VALIDATION STATUS
6.	Day 1	Hour 1	--	--	--	**VALID** (start-up grace period)
		Hour 2	--	--	--	**VALID**
		Hour 3	--	--	--	**VALID**
		Hour 4	--	--	--	**VALID**
		Hour 5	--	--	--	**VALID**
		Hour 6	--	--	--	**VALID**
		Hour 7	--	--	--	**VALID**
		Hour 8	P			
		Hour 8		P	Y	**VALID** (C.E. Test passed)
						Day 1 Hr 8 thru Day 2 Hr 9
7.	Day 1	Hour 1	--	--	--	**VALID** (start-up grace period)
		Hour 2	--	--	--	**VALID**
		Hour 3	--	--	--	**VALID**
		Hour 4	--	--	--	**VALID**
		Hour 5	--	--	--	**VALID**
		Hour 6	--	--	--	**VALID**
		Hour 7	--	--	--	**VALID**
		Hour 8	--	--	--	**VALID**
		Hour 9	--	--	--	**INVALID** (grace period expired)
		Hour 10	P			
		Hour 10		P	Y	**VALID** (C.E. Test passed)
						Day 1 Hr 10 thru Day 2 Hr 11
8.	Day 1	Hour 1	--	--	–	**VALID** (start-up grace period)
		Hour 2	--	--	--	**VALID**
		Hour 3	--	--	--	**VALID**
		Hour 4	--	--	--	**VALID**
		Hour 5	P			
		Hour 5		F	N	**INVALID** (C.E. Test Failed)
		Hour 6	F		N	
		Hour 6	P		N	**INVALID** (C.E. Test Failed)
		Hour 7		P	Y	**VALID** (C.E. Test passed)
						Day 1 Hr 7 thru Day 2 Hr 8

EX#	DAY	HOUR	ZERO	HIGH	PASSED TEST?	DATA VALIDATION STATUS
9.	Day 1	Hour 1	--	--		**VALID** (start-up grace period)
		Hour 2	--	--	--	**VALID**
		Hour 3	--	--	--	**VALID**
		Hour 4	--	--	--	**VALID**
		Hour 5	--	--	--	**VALID**
		Hour 6	--	--	--	**VALID**
		Hour 7	--	--	--	**VALID**
		Hour 8	--	--	--	**VALID** (end of grace period)

Unit shuts down during Day 1 Hour 8, and unit restarts Day 2 Hour 1.

On Day 2, the unit does not meet the criteria to receive an additional 8 hour start up grace period because the original grace period ended on Day 1, Hour 8 and no valid on-line calibration error test was performed within 26 clock hours of the last hour of unit operation on Day 1.

	Day 2	Hour 1	--	--	--	**INVALID** (no grace period)
		Hour 2	--	--	--	**INVALID**
		Hour 3	P			
		Hour 3		P	Y	**VALID** (C.E. Test passed)

Day 2 Hr 3 thru Day 3 Hr 4

10.	Day 1	Hour 1	--	--	--	**VALID**[a]
		Hour 2	--	--	--	**VALID**
		Hour 3		Unit Trip (Off-Line)[b]		
		Hour 4	--	--	--	**VALID**[c]
		Hour 5		Unit Trip (Off-Line)[b]		
		Hour 6	--	--	--	**VALID**[c]
		Hour 7	--	--	--	**VALID**
		Hour 8	--	--	--	**VALID**
		Hour 9	--	--	--	**INVALID**[d]
		Hour 10	P	F	N	**INVALID** (C.E. Test Failed)
		Hour 11	P	P	Y	**VALID** (C.E. Test passed)

Day 1 Hr 11 thru Day 2 Hr 12

Unit shuts down during Day 1 Hour 11 and restarts Day 2 Hour 3.

EX#	DAY	HOUR	ZERO	HIGH	PASSED TEST?	DATA VALIDATION STATUS
10. (cont.)						
	Day 2	Hour 3	--	--	--	**VALID**[a]
		Hour 4	--	--	--	**VALID**
		Hour 5	--	--	--	**VALID**
		Hour 6	--	--	--	**VALID**
		Hour 7	--	--	--	**VALID**
		Hour 8	--	--	--	**VALID**
		Hour 9	--	--	--	**VALID**
		Hour 10	--	--	--	**VALID**
		Hour 11	--	--	--	**VALID**[d]
		Hour 12	--	--	--	**VALID**
		Hour 13	--	--	--	**INVALID**[e]
		Hour 14	P	P	Y	**VALID** (C.E. Test passed) Day 2 Hr 14 thru Day 3 Hr 15

[a]Qualifying start-up grace period begins.

[b]Unit operating time in RT 300 = "0."

[c]New start-up "event" begins (Unit operating time in RT 300 = positive). No new grace period (event begins within grace period of a previous event).

[d]Start-up grace period expired. However, on Day 2, the data are valid because the 26 clock hour window from the C.E. test on Day 1, Hour 11 has not expired.

[e]Twenty-six hour calibration window for the C.E. test on Day 1, Hour 11 has expired.

References: Appendix B, Sections 2.1 through 2.1.5

Key Words: Calibration error, Reporting

History: First published in March 1995, Update #5; revised in October 1999 Revised Manual

Question 10.14 RETIRED

Question 10.15

Topic: Use of Instrument Air for Calibration

Question: May a utility use scrubbed instrument air, with an assumed O_2 concentration of 20.9% O_2, for calibration of an O_2 monitor?

Answer: Yes. However, the O_2 monitor span must be set greater than or equal to 21.0% O_2. Furthermore, the utility must document that the conditioned gas will not contain concentrations of other gases that interfere with instrument O_2 readings (a certification statement from the vendor of the gas scrubbing system or equipment will suffice). Also, in the QA/QC plan for the plant required by Appendix B, include routine maintenance and quality control procedures for ensuring that the instrument air continues to be properly cleaned.

References: § 72.2; Appendix A, Sections 2.1.3 and 5.2.4; Appendix B, Section 1

Key Words: Calibration gases, Diluent monitors, Span

History: First published in July 1995, Update #6; revised in October 1999 Revised Manual

Question 10.16 REVISED

Topic: Monitor Ranges for Units with Low NO_x Burners

Question: Are low NO_x burners installed at coal fired power plants considered to be add-on emission control devices? Would utilities with low NO_x burners in use be allowed to remove the high range of 0 - 1,000 ppm?

Answer: Low NO_x burners (LNB) are not considered add-on emission controls. However, as noted in Section 2.1.2.5(a) of Appendix A, installation of a low-NO_x burner is an example of a change that may require a span and range adjustment. To determine whether a new span and range are needed following the installation of a LNB, the owner or operator should examine the subsequent NO_x emission data in light of the guideline in Section 2.1 of Appendix A. Specifically, Section 2.1 states: "select the range such that the majority of the readings obtained during typical unit operation are kept, to the extent practicable, between 20.0 and 80.0 percent of the full scale range of the instrument." If the NO_x concentration readings do not consistently meet this guideline, then the span and range should be adjusted accordingly. If a span adjustment is necessary, base the maximum potential concentration (MPC) used to determine the new span value on the historical CEMS data (720 hours minimum) collected since the installation of the LNB. If the span and range are changed, provide a monitoring plan update according to Section 2.1.2.5 of Appendix A. For daily calibration and linearity tests, calibration gases must be used that are consistent with the new span value.

References: Appendix A, Sections 2.1, 2.1.2.4, and 2.1.2.5

Key Words: Control devices, Dual-range monitors, Low NO_x burners

History: First published in July 1995, Update #6; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 10.17

Topic: Appendix D and E Orifice Fuel Flowmeter Calibration

Question: A utility has an orifice fuel flowmeter system with three transmitters: a differential pressure transmitter; an absolute pressure transmitter; and a temperature transmitter. The absolute pressure and temperature transmitters are used to compensate for actual conditions. The signals from all three transmitters are combined to determine standard cubic feet per minute flow rate in order to determine the accuracy of the system.

Appendix D, Section 2.1.5 requires each fuel flowmeter to meet a flowmeter accuracy of ± 2.0% of the upper range value (URV). The utility finds it is very difficult to calibrate all three transmitters at the same time. The temperature can be as high as 300°F, the absolute pressure is 0 - 350 psig and the differential pressure is usually 0 - 100 inches of water (@3.5 psig).

So, how should the utility calibrate and calculate the accuracy of this fuel flowmeter system?

Answer: Check the calibration for the three transmitters separately. Calibrate each transmitter at the zero level and at least two other levels (e.g., mid and high), so that the full range of transmitter or transducer readings corresponding to normal unit operation is represented. The flowmeter accuracy specification of 2.0% of the URV must be met at each level tested.

If, at a particular level, the accuracy for each transmitter is less than or equal to 1.0% when calculated according to Equation D-1a in Appendix D, then the fuel flowmeter accuracy specification of 2.0% of the URV is considered to be met at that level. At each level tested, report the highest calculated accuracy for any of the transmitters in RT 628 and keep the results of the tests on the other transmitters on site.

If, at a particular level, the accuracy of one or more of the transmitters is greater than 1.0%, there are two alternative ways to demonstrate compliance with the fuel flowmeter accuracy specification of 2.0% of the URV: (1) If the sum of the calculated accuracies for the three transmitters is less than or equal to 4.0%, the results are considered acceptable; or (2) If the total fuel flowmeter accuracy is ≤ 2.0% when calculated according to Part 1 of American Gas Association Report

No. 3, "General Equations and Uncertainty Guidelines," the results are considered acceptable.

If the required fuel flowmeter accuracy specification of 2.0% of the URV is not met at any of the levels tested, follow the applicable procedures in Section 2.1.6.3 of Appendix D ("Failure of Transducer(s) or Transmitter(s)").

References: Appendix D, Sections 2.1.5 and 2.1.6

Key Words: Calibration error, Excepted methods, Fuel sampling

History: First published in November 1995, Update #7; revised in October 1999 Revised Manual

Question 10.18

Topic: Interference Checks and Data Validation

Question: Does the data validation policy for daily calibration error tests found in Policy Manual Question 10.13 also apply to daily interference checks for flow monitors?

Answer: Yes. On November 20, 1996, EPA published revisions to Part 75, which provide a startup grace period for both daily calibration error tests and for daily flow monitor interference checks. These provisions are found in Section 2.1.5.2 of Appendix B.

References: Appendix A, Section 2.2.2.2; Appendix B, Section 2.1.5.2; Question 10.13

Key Words: Flow monitoring, Quality assurance, Reporting

History: First published in November 1995, Update #7; revised in October 1999 Revised Manual

Question 10.19 REVISED

Topic: Maximum Potential Concentration

Question: Can the SO_2 and NO_x maximum potential concentrations be adjusted by tracking the hourly values on a 30 day basis?

Answer: No, do not adjust the maximum potential concentrations each month based upon the concentrations during the last month. The maximum potential concentration (MPC) is considered to be a long term value that will change only if there are significant changes to the fuel being burned or to the manner of unit operation, or

if a required annual evaluation of the span and range values or an audit by the regulatory agency shows that an improper span value (and hence an improper MPC value) has been selected.

References: Appendix A, Sections 2.1.1.5, 2.1.2.5, 2.1.3.2, and 2.1.4.3

Key Words: Monitoring plan, NO_x monitoring, SO_2 monitoring, Span

History: First published in November 1995, Update #7; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 10.20 RETIRED

Question 10.21 REVISED

Topic: Linearity Check for Dual Range Analyzer

Question: Our unit has a dual range analyzer but we generally use only the low range. Must we do a linearity test on the high range each quarter?

Answer: No. A linearity check is only required on the range used during the quarter. Note however that there is an upper limit of four calendar quarters between linearities at each range, so even if one range were not used at all, a linearity check must be conducted on that range at least once every four quarters (see Appendix B, Section 2.2.3(f)). Also note that for SO_2 and NO_x, Part 75 provides an option for using a default high range value, in lieu of operating, maintaining and calibrating a high monitor range (see Appendix A, Sections 2.1.1.4(f) and 2.1.2.4(e)).

References: Appendix A, Sections 2.1.1.4(f) and 2.1.2.4(e); Appendix B, Section 2.2.3(f)

Key Words: Dual range monitors, Linearity

History: First published in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 10.22

Topic: Off-line Calibration Demonstration Test

Question: Is the off-line calibration demonstration a one time test?

Answer: Yes, unless you are told to repeat the test as the result of an audit or other finding. (See EDR instructions for RT 623.)

References: Appendix B, Section 2.1.1.2

Key Words: Calibration error

History: First published in October 1999 Revised Manual

Question 10.23 RETIRED

Question 10.24

Topic: Grace Period Linearity Check

Question: If we utilize the grace period to perform a linearity check within the first 168 operating hours of the next quarter, does that grace period linearity count for both quarters?

Answer: No. Each QA operating quarter has a separate linearity requirement.

References: Appendix B, Section 2.2.4

Key Words: Deadlines, Linearity

History: First published in October 1999 Revised Manual

Question 10.25

Topic: Aborted Calibration Test

Question: We aborted the calibration error test of our gas monitor, since the zero level failed. How should such aborted calibrations be reported?

Answer: Report the zero level results only. Do not attempt to report any default values (e.g., "999" or "XXX") to simulate a high level injection when the test is aborted after the zero level calibration. A single failed gas injection is considered to be a failed calibration error test and puts the monitor in an out-of-control status.

References: § 75.59(a)(1); Appendix B, Section 2.1.6

Key Words: Calibration error, Reporting

History: First published in October 1999 Revised Manual

Question 10.26 REVISED

Topic: Flow-to-load Test Failure -- Data Invalidation Period

Question: If we fail a quarterly stack flow-to-load ratio test, what data are invalidated?

Answer: It depends. According to section 2.2.5(c)(8) of Appendix B, when you fail a flow-to-load ratio or GHR test, you may either declare the flow monitoring system out-of-control, beginning with the first hour of unit operation in the quarter following the quarter for which the quarterly stack flow-to-load ratio test failed, or you may perform a probationary calibration error test and declare the flow rate data conditionally valid, pending the results of an investigation and follow-up diagnostic testing. Whichever alternative you choose, section 2.2.5(c)(8) requires you to implement Option 1 in section 2.2.5.1 or Option 2 in section 2.2.5.2, to re-establish a "valid" status for data from the flow monitor. Sections 2.2.5.1 and 2.2.5.2 provide detailed data validation instructions to achieve this.

References: Appendix B, Sections 2.2.5(c)(8), 2.2.5.1, 2.2.5.2, and 2.2.5.3

Key Words: Data validity, Flow-to-load test

History: First published in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 10.27

Topic: Definition of Over-scaling

Question: Please clarify the definition of over-scaling. Is an instantaneous reading or a one minute average or a 15 minute average above the range considered a full-scale exceedance?

Answer: Over-scaling is an exceedance of the high range of a continuous monitor, as described in Appendix A, Sections 2.1.1.5 (for SO_2), 2.1.2.5 (for NO_x), and 2.1.4.3 (for flow). During hours in which the NO_x concentration, SO_2 concentration, or flow rate is greater than the analyzer's capability to measure, the owner or operator is instructed to substitute 200% of the full scale range of the instrument for that hour. This is sufficiently clear for hours in which all data recorded by a monitor are off-scale. However, the rule does not give specific

instructions on how to calculate emissions during an hour in which over-scaling occurs during only part of an hour.

There are two acceptable methods for reporting hourly data when a high scale range exceedance occurs only for part of an hour. Regardless of what method is used, the method must be implemented by the data acquisition and handling system in an automated fashion so that a value of 200% of the range is automatically substituted at the appropriate time. The two methods are outlined below:

Method 1

(1) Establish the shortest or fundamental averaging period for which data are continuously recorded by the monitor (i.e., the time "x" required for one complete cycle of analyzing, reading, and data recording, where "x" may be 5 seconds, 10 seconds, or 60 seconds, depending on the type of data collection used in the DAHS/CEMS).

(2) If *any* of the fundamental readings recorded during an hour exceeds the range of the analyzer (i.e., if over-scaling occurs) then report 200% of the range for that hour and report an MODC of 20 to indicate a full scale range exceedance.

Method 2

(1) Establish the shortest or fundamental averaging period for which data are continuously recorded by the monitor (i.e., the time "x" required for one complete cycle of analyzing, reading, and data recording, where "x" may be 5 seconds, 10 seconds, or 60 seconds, depending on the type of data collection used in the DAHS/CEMS).

(2) Calculate the hourly average pollutant concentration as the arithmetic average of all fundamental data values recorded during the hour, in the following manner:

(a) If the fundamental reading is lower than the analyzer range, use the reading directly in the calculation of the hourly average;

(b) If the fundamental reading indicates a range exceedance, then substitute 200% of the range for that reading.

(3) Report the hourly average calculated in the manner described in step (2) above as an unadjusted concentration value and use MODC 20 to indicate that a range exceedance occurred for at least part of the hour.

References: Appendix A, Sections 2.1.1.5, 2.1.2.5, and 2.1.4.3

Key Words: Monitoring range, Reporting

History: First published in October 1999 Revised Manual

Question 10.28

Topic: Dual Range Analyzers

Question: For a dual range analyzer defined as two separate components of a single monitoring system, which component ID do we report for an hour in which readings from both ranges are used to record data? How is the hourly average concentration determined?

Answer: For the case described (a dual range analyzer defined as two separate components of the same monitoring system), you may either implement Option 1 or Option 2 below, to calculate the average concentration and to determine which component ID (low scale or high scale) must be reported for an hour in which both ranges are used.

Option 1

(1) Establish the shortest or fundamental averaging period for which data are continuously recorded by the monitor (i.e., the time "x" required for one complete cycle of analyzing, reading, and data recording, where "x" may be 5 seconds, 10 seconds, or 60 seconds, depending on the type of data collection used in the DAHS/CEMS).

(2) If, during a particular hour, one or more fundamental readings are recorded on the high range, calculate the hourly average as follows:

(a) For all of the quality-assured fundamental readings recorded on the low scale during the hour, use the readings directly in the calculation of the hourly average;

(b) For the fundamental reading(s) recorded on the high range during the hour:

(i) If the high range is able to provide quality-assured data at the time of the reading (i.e., if the range is up-to-date with respect to its linearity check requirements and has passed a calibration error test within the last 26 clock hours), use the fundamental reading directly in the calculation of the hourly average; or

(ii) If the high range is not quality assured at the time of the reading, substitute the maximum potential concentration (MPC) for the reading and use the substitute value in the calculation of the hourly average (see Appendix A, Sections 2.1.1.5(b)(2) and 2.1.2.5(b)(2)).

(3) Report data for the hour using the high range component ID.

Option 2

(1) Establish the shortest or fundamental averaging period for which data are continuously recorded by the monitor as described in paragraph (1) under Option 1, above.

(2) Calculate the hourly average pollutant concentration as described in paragraphs (2)(a) and (2)(b) under Option 1, above.

(3) Except as noted in paragraph (5) below, if the calculated hourly average from step (2) is less than or equal to the full-scale setting of the low range, use the low range component ID to report data for the hour.

(4) Except as noted in paragraph (5) below, if the hourly average from step (2) is greater than the full-scale setting of the low range, use the high range component ID to report data for the hour.

(5) For some dual range CEM systems, an alarm or other mechanism causes the monitor to switch from the low range to the high range when emissions reach a pre-set level (e.g., for a low range of 200 ppm, the alarm may cause the high range to be activated when the emission level exceeds 175 ppm). For this type of system, use the low range component ID to report data for the hour if the hourly average from step (2) is less than or equal to the pre-set emission level at which the high range is activated. Use the high range component ID to report data for the hour if the calculated hourly average exceeds the pre-set emission level.

References: Appendix A, Sections 2.1.1.4, 2.1.1.5 , 2.1.2.4, 2.1.2.5

Key Words: Dual range monitors, Reporting

History: First published in March 2000, Update #12

Question 10.29 REVISED

Topic: Default High Range Value

Question: For units with dual span requirements, in lieu of operating and maintaining a high monitor range, Sections 2.1.1.4(f) and 2.1.2.4(e) of Appendix A to Part 75 allow the use of a default high range value of 200% of the MPC when the full-scale of the low range analyzer is exceeded. When the default high range option is selected, how is the hourly average SO_2 or NO_x concentration calculated? What happens when the full-scale of the low range analyzer is exceeded for only part of the hour?

Answer: To implement the default high range provision, you may use either of the following options:

Option 1

(1) Establish the shortest or fundamental averaging period for which data are continuously recorded by the monitor (i.e., the time "x" required for one complete cycle of analyzing, reading, and data recording, where "x" may be 5 seconds, 10 seconds, 60 seconds, or some other time period, depending on the type of data collection used in the DAHS/CEMS).

(2) If any of the fundamental readings recorded during an hour exceeds the full-scale of the low range analyzer, report 200% of the MPC for that hour (see exception in the Note below) and report a method of determination code (MODC) of "19" to indicate the use of the default high range value.

Option 2

(1) Establish the shortest or fundamental averaging period for which data are continuously recorded by the monitor, as described in paragraph (1) of Option 1, above.

(2) Calculate the hourly average pollutant concentration as the arithmetic average of all quality-assured fundamental data values recorded during the hour, in the following manner:

(a) If a fundamental reading is less than the full-scale of the low range analyzer, use the reading directly in the calculation of the hourly average;

(b) If a fundamental reading indicates that the low range is "pegged" (i.e., the monitor output voltage indicates that the full-scale of the low range has been reached or exceeded), substitute 200% of the MPC for that reading (see exception in the Note below) and use the substituted value in the calculation of the hourly average.

(3) Report the hourly average calculated in the manner described in step (2) above as the unadjusted pollutant concentration and report an MODC of "19" to indicate that the default high range value was used for at least part of the hour.

Note: For new combustion turbines, the June 12, 2002 revisions to Part 75 disallow the use of a NO_x MPC value of 50 ppm previously selected from Table 2-2 in Appendix A, after March 31, 2003 (see Appendix A, section 2.1.2.1(a), Option 2). After March 31, 2003, the MPC must be re-determined in accordance with revised section 2.1.2.1(a), and any appropriate span and range adjustments or, if applicable, adjustments to the default high range value, must be made.

References: § 75.57, Table 4A; Appendix A, Sections 2.1.1.4(f), 2.1.2.1(a), 2.1.2.4(e); EDR v2.1/2.2 Reporting Instructions, Sections III.B.(1) and III.B.(2)

Key Words: Default high range, Dual range monitors, Reporting

History: First published in March 2000, Update #12; revised in December 2000, Update #13; revised in October 2003 Revised Manual

Question 10.30

Topic: Calibration Error Test Following Non-routine Calibration Adjustments

Question: Section 2.1.3 of Appendix B to Part 75 requires an "additional" calibration error test to be performed whenever "non-routine" calibration adjustments are made to a monitor. Section 2.2.3 of Appendix B allows non-routine adjustments prior to quarterly linearity checks. Is it necessary to perform the additional calibration error test prior to the linearity test or can this calibration error test be performed immediately after the linearity check?

Answer: You may perform the additional calibration error test after the linearity check rather than prior to the check. However, you must follow the data validation rules in Sections 2.1.3(a) and (c) of Appendix B associated with this calibration error test. Sections 2.1.3(a) and (c) state that following non-routine adjustments, emission data from a monitor are considered to be invalid until an additional "hands-off"calibration error test has been completed and passed, which demonstrates that the monitor is operating within its performance specifications. Therefore, if you perform the additional calibration error test after a linearity check, you must invalidate any emission data collected in the time period beginning with the non-routine adjustment of the monitor and ending at the time of successful completion of the calibration error test. In order to validate the linearity test, the calibration error test must show the monitor to be operating within its performance specification band (± 2.5% of span). If the calibration error test shows that the monitor is not operating within its performance specification, the linearity test is invalidated and must be repeated. Report an "A" flag in column 69 of each of the RTs 601 in the invalidated linearity test. Do not report RT 602 for this test.

References: Appendix B, Sections 2.1.3 and 2.2.3

Key Words: Calibration error

History: First published in March 2000, Update #12

Question 10.31

Topic: Linearity Check Following Span Adjustment

Question: If a facility changes the span of a gas monitor, is a linearity check required?

Answer: It depends. Sections 2.1.1.5 and 2.1.2.5 of Appendix A to Part 75 require a diagnostic linearity check to be performed following a span adjustment of a gas monitor *only if* the span adjustment is so significant that the calibration gases currently used for daily calibration error tests and linearity checks are unsuitable for use with the new span value. For instance, suppose that the span of a NO_x monitor is 1000 ppm and the "low," "mid," and "high" calibration gases currently in use have concentrations of 250 ppm, 525 ppm, and 825 ppm, respectively. If, following a required annual span and range evaluation, the span is changed to 900 ppm, these calibration gas concentrations, expressed as percentages of the new span value, would be, respectively, 27.8%, 58.3%, and 91.6%. Since the calibration gases are still within the tolerance bands for low, mid, and high-level concentrations (i.e., 20.0-30.0% of span for low-level, 50.0-60.0% of span for mid-level, and 80.0-100.0% of span for high level), a diagnostic linearity check would not be required in this case. However, if the span had been lowered to 800 ppm or less, the current calibration gases would no longer be within the tolerance bands and a diagnostic linearity check would be required.

In cases where a span adjustment is required and the current calibration gases are unsuitable for use with the new span value, the owner or operator has up to 90 days after the end of the quarter in which the need to adjust the span is identified to implement the change (see Sections 2.1.1.5 and 2.1.2.5 of Appendix A). This allows time to purchase and receive the new calibration gases.

References: Appendix A, Section 2.1.1.5 and 2.1.2.5

Key Words: Linearity, Span

History: First published in March 2000, Update #12

Question 10.32

Topic: Diagnostic Linearity Check

Question: If, during a "QA operating quarter," a successful diagnostic linearity check is performed following a change to the span of a gas monitor, may this diagnostic linearity check be used to meet the quarterly linearity check requirement of Section 2.2.1 of Appendix B to Part 75?

Answer: Yes. This is consistent with Section 2.4 of Appendix B, which allows quality assurance tests to serve a dual purpose. In the example cited in Section 2.4, a

single linearity check is used to meet a recertification requirement and to satisfy the routine quality assurance requirements of Appendix B.

In EDR v2.1/2.2, there is a new field in column 75 of RT 602 (Linearity Check Results), in which the "Reason for Test" is reported (e.g., "Q" = routine quality assurance, "D" = diagnostic, "R" = recertification, etc.). When a test is performed for a dual purpose, a two-letter code is used. In the present example, since the linearity check is done both for routine quality assurance and as a diagnostic test, the code "QD" would be reported in RT 602, column 75.

References: Appendix B, Sections 2.2.1 and 2.4; EDR v2.1/2.2, RT 602

Key Words: Linearity, Reporting

History: First published in March 2000, Update #12

Question 10.33

Topic: Span and Range -- Annual Evaluation

Question: What must I do to comply with the provisions of Sections 2.1.1.5, 2.1.2.5, and 2.1.4.3 of Appendix A to Part 75, which require an annual evaluation of the span and range of my continuous emission monitors? Are there any other times at which span and range evaluations would be required?

Answer: To comply with the annual span and range evaluation provisions of Part 75, you must examine your historical CEMS data at least once per year to see if the current span and range values meet the guideline in Section 2.1 in Appendix A. According to that guideline, the full-scale range of a monitor must be selected so that data recorded during normal operation are kept, to the extent practicable, between 20.0 and 80.0% of full-scale. Section 2.1 also describes several allowable exceptions to the "20-to-80 percent of range" criterion.

The annual span and range evaluation may be done in any quarter of the year. At a minimum, the evaluation consists of examining all measured CEMS data (not substitute data) from the previous four calendar quarters, for each pollutant or parameter (i.e., SO_2 concentration, NO_x concentration, CO_2 concentration, and flow rate). You may also include data recorded in the quarter of the evaluation. For example, if the data analysis is performed in the fourth quarter of the year, the analysis must include all data from the 4th quarter of previous year through the 3rd quarter of the current year, and may (at the discretion of the owner or operator) include additional data from the 4th quarter of the current year.

Determine the percentage of the data that fall between 20.0 and 80.0% of full-scale and the percentage of the data that fall outside this range. The introductory text to Sections 2.1.1.5, 2.1.2.5, and 2.1.4.3 of Appendix A makes it clear that

data recorded during short-term, non-representative operating conditions (such as a trial burn of a different fuel) should be excluded from the data analysis. If the majority (>50%) of the historical data are found to be within the 20.0 to 80.0% band, the current span and range values are acceptable and may continue to be used.

The results of annual span and range evaluations must be kept on-site, in a format suitable for inspection (see introductory text to Sections 2.1.1.5, 2.1.2.5, and 2.1.4.3 of Appendix A). Do not send these results to EPA.

If, for any pollutant or parameter, the results of the annual span and range evaluation fail to meet the guideline in Section 2.1 of Appendix A, Sections 2.1.1.5(a), 2.1.2.5(a), and 2.1.4.3(a) of Appendix A require that you adjust the span and range. When span and range adjustments are required, you have up to 45 days after the end of the quarter in which the need to adjust the span is identified (in this case, the quarter of the span and range evaluation) to implement the change, with one exception—for span and range changes to a gas monitor that require new calibration gases to be purchased because the current calibration gases are unsuitable for use with the new span value, you have up to 90 days after the end of the quarter of the unsatisfactory span and range evaluation to implement the span and range changes.

In addition to the annual evaluations, you may also have to conduct span and range evaluations whenever you plan to change the manner of operation of the affected unit(s), such that the emissions or flow rates may change significantly (see Sections 2.1.1.5(a), 2.1.2.5(a), and 2.1.4.3 of Appendix A). For example, installation of emission controls may require certain monitors to be re-spanned and re-ranged. You should plan any span and range changes needed to account for such changes in unit operation, so that they are made in as timely a manner as practicable to coordinate with the operational changes.

References: Appendix A, Sections 2.1.1.5(a), 2.1.2.5(a), and 2.1.4.3(a)

Key Words: Span

History: First published in March 2000, Update #12

Question 10.34

Topic: Preapproval for Use of Mid-level Calibration Gas

Question: If we use the new provision allowing the use of mid-level calibration gas, do we have to get preapproval?

Answer: No, preapproval is not required.

References: Appendix A, Section 6.3.1

Key Words: Calibration gases

History: First published in March 2000, Update #12

Question 10.35

Topic: Justification for Non-routine Calibration Adjustment

Question: What is an acceptable technical justification for a non-routine calibration adjustment? The rule states that such adjustments may be made prior to a RATA or linearity. May they also be made after any daily calibration?

Answer: Non-routine adjustments are allowed prior to RATAs and linearities because calibration gases are only guaranteed accurate to within 2% of the tag value. For daily calibrations, users of dilution-extractive systems that are very sensitive to ambient conditions, the revised rule allows an adjustment away from the tag value (but still within the performance specification band), when it is justified on technical grounds, such as an anticipated barometric pressure change, and is part of the QA plan for the CEMS. An additional calibration error test must be performed after non-routine adjustments to demonstrate that the analyzer is still operating within its performance specifications.

References: Appendix B, Section 2.1.3(c)

Key Words: Calibration error, Linearity, RATA

History: First published in March 2000, Update #12

Question 10.36 RETIRED

Question 10.37

Topic: Effects of BAF on Full-scale Exceedance Reporting

Question: When full-scale exceedances of a high-scale monitoring range occur, Part 75 requires a value of 200% of the range to be reported. If the full-scale range is exceeded for only part of the hour, Policy Question 10.27 allows the hourly average to be calculated using a combination of real monitored data and the default value of 200% of the range. What happens if an hourly average SO_2

concentration calculated in this manner is multiplied by the bias adjustment factor (BAF), and gives a result greater than 200% of the range (e.g., if data are off-scale for 59 minutes of the hour and on-scale for one minute)? Will the Emission Tracking System (ETS) give an error message?

Answer: If the calculated hourly average SO_2 concentration times the BAF gives a result less than or equal to 200% of the range, report this result as the bias-adjusted SO_2 concentration. If the calculated SO_2 concentration times the BAF gives a result higher than 200% of the range, report 200% of the range as the bias-adjusted concentration. This will ensure that no error message is generated by ETS.

Note that when a "default high range" SO_2 value of 200% of the MPC is used for exceedances of a low-scale monitor range (as allowed under Section 2.1.1.4 (f) of Appendix A to Part 75), similar considerations apply. If the calculated hourly average SO_2 concentration times the BAF gives a result less than or equal to 200% of the MPC, report this result as the bias-adjusted SO_2 concentration. If the calculated SO_2 concentration times the BAF gives a result higher than 200% of the MPC, report 200% of the MPC as the bias-adjusted concentration (see Policy Question 10.29).

References: Appendix A, Sections 2.1.1.4(f), 2.1.1.5(b)

Key Words: Bias adjustment factor, Range

History: First published in March 2000, Update #12

Question 10.38 REVISED

Topic: Overscaling -- Adjustment of Span and Range

Question: Sections 2.1.1.5(b) and 2.1.2.5(b) in Appendix A to Part 75 say that when "overscaling" occurs (when the full-scale of a "high" SO_2 or NO_x measurement range is exceeded), you should "make appropriate adjustments to the MPC, span and range to prevent future full-scale exceedances." If I am using the Method 1 or Method 2 procedure described in Policy Question 10.27 to calculate the hourly averages when overscaling occurs, how much overscaling is allowed before I have to make "appropriate adjustments" to the MPC and adjust the span and range of the monitor?

Answer: Use the following guidelines:

(1) When the Method 1 procedure described in policy Question 10.27 is applied, no adjustments to the MPC, span, and range are needed, provided that:

(a) For each operating hour in which overscaling occurs, a value of 200.0% of the range is reported for that hour; and

(b) In a given calendar quarter, overscaling does not occur in more than 2% of the unit operating hours or 20 unit operating hours (whichever is less restrictive).

If overscaling occurs more often than this, re-span and re-range the analyzer.

(2) When the Method 2 procedure described in Policy Question 10.27 is applied:

(a) No adjustments to the MPC, span, or range are needed, provided that the following conditions are met on a quarterly basis:

(i) For each fundamental averaging period (e.g., minute average) in which emissions are off-scale, a value of 200.0% of the range is used in the hourly average calculation (see exception in the Note below); and

(ii) None of the calculated hourly averages exceed the MPC, the span value or the full-scale range.

(b) If, in a particular calendar quarter, one or more calculated hourly averages exceed the span and/or the MPC, but none of them exceeds the full-scale range value, adjust the MPC to be equal to the highest such hourly average and (if necessary) reset the span -- however, do not adjust the full-scale range.

(c) If, in a particular quarter, one or more calculated hourly averages exceed the full-scale range value, re-span and re-range the analyzer if the total number of such hourly averages exceeds 2% of the unit operating hours or 20 unit operating hours (whichever is less restrictive).

(3) If you must re-span or re-range the analyzer, make the changes no later than 45 days after the end of the quarter in which the need to re-span or re-range is identified or 90 days after the end of that quarter, if the calibration gases currently being used for daily calibration checks and linearity tests are unsuitable for use with the new span value (see Appendix A, Sections 2.1.1.5 and 2.1.2.5).

Note: For new combustion turbines, the June 12, 2002 revisions to Part 75 disallow the use of an MPC value of 50 ppm previously selected from Table 2-2 in Appendix A, after March 31, 2003 (see Appendix A, section 2.1.2.1(a), Option 2). After March 31, 2003, the MPC must be re-determined in accordance with revised section 2.1.2.1(a) and any appropriate span and range adjustments must be made..

References: Appendix A, Sections 2.1.1.5 and 2.1.2.5 and Table 2-2

Key Words: Full-scale exceedance, Overscaling, Span, Range

History: First published in December 2000, Update #13; revised in October 2003 Revised Manual

Question 10.39 NEW

Topic: Zero-level gases for O_2 Analyzers

Question: Question 10.2 describes "zero air material," which may be used in lieu of a zero-level EPA Protocol gas for daily calibrations of SO_2, NO_x and CO_2 monitors. However, Question 10.2 does not discuss how to zero an O_2 analyzer. What types of zero material(s) may be used to calibrate an O_2 analyzer ?

Answer: The following calibration materials may be used to zero an O_2 analyzer:

(1) A "zero-level" EPA Protocol gas, consisting of O_2 (at a concentration > 0.0% but $\leq$ 20.0% of the span value) in nitrogen; or

(2) High-purity nitrogen, certified by the vendor to contain:

- Concentrations of SO_2, NO_x, or total hydrocarbons $\leq$ 0.1 parts per million (ppm);
- A CO concentration $\leq$ 1 ppm;
- A CO_2 concentration $\leq$ 400 ppm[1]; *and*
- An O_2 concentration < 500 ppm (0.05% O_2); or

(3) An EPA protocol gas cylinder containing NO_x in oxygen-free nitrogen. Note that the "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards" requires that nitrogen oxide standards be blended only with oxygen-free nitrogen containing < 0.5 ppm of oxygen; or

(4) Any other EPA Protocol gas mixture for which:

- O_2 is either not listed as a component of the mixture on the vendor's certificate of analysis or, if listed, has a concentration < 500 ppm (0.05% O_2); and
- Nitrogen, with a certified purity of 99.95% or better is used as the balance gas.

[1] The specified maximum SO_2, NO_x, CO_2, THC and CO concentrations are the same as for "zero air material" under § 72.2

References: § 72.2; Question 10.2; "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards" (EPA-600/R-97/121; Research Triangle Park, NC; September, 1997)

Key Words: Calibration gases

History: First published in the October 2003 Revised Manual

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SECTION 11
OTHER QA/QC REQUIREMENTS

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Question 11.1

Topic: QA/QC Plan

Question: What are the specific requirements for content of a QA/QC Plan?

Answer: The minimum requirements for a Quality Assurance/Quality Control (QA/QC) Plan are specified in Appendix B to 40 CFR Part 75.

References: Appendix B, Section 1

Key Words: Quality assurance, Recordkeeping

History: First published in Original March 1993 Policy Manual

Question 11.2

Topic: QA/QC Plan

Question: Must the QA/QC Plan be submitted to EPA?

Answer: The final Part 75 rule does not require that the QA/QC Plan be submitted to EPA. Rather, as specified in the "Response to Public Comment" document, the intent of the rule is that the Plan be maintained at the applicable plant site and that the Plan be updated as necessary. Since the requirement to conduct daily assessments on the system is effective as of the date when certification testing is completed (see Section 2.1 of Appendix B to 40 CFR Part 75), the Plan should be in place as of the date certification testing is conducted on a CEM system.

References: § 75.57(a)(4)

Key Words: Quality assurance, Recordkeeping

History: First published in Original March 1993 Policy Manual

Question 11.3

Topic: Flow Temperature QA

Question: How should we quality assure temperature monitoring devices used by a flow monitor to determine temperature corrections?

Answer: Since there are no separate performance specifications for temperature measurement equipment, there are no QA procedures that must be used to evaluate the accuracy of temperature calculations performed by such monitoring devices. The accuracy of measurements made with such devices, however, will be determined through periodic (semiannual or annual) relative accuracy test audits of the flow monitor and the quarterly flow-to-load ratio evaluations.

References: Appendix A, Sections 3, 6.5, and 7.2; Appendix B, Section 2.2.5

Key Words: Flow monitoring, Flow-to-load test, Quality assurance, RATAs

History: First published in Original March 1993 Policy Manual; revised in October 1999 Revised Manual

Question 11.4

Topic: Hands-off Requirement for QA Testing

Question: Please clarify what is meant by performing a QA test hands-off.

Answer: For daily calibration error tests, hands-off means that the zero and upscale calibrations are performed in succession, with no adjustments to the monitor. For linearity tests and RATAs, the hands-off requirement means that only routine calibration adjustments (as defined in Appendix B, Section 2.1.3) are allowed during the test. For example, if the linearity test for a peaking unit extends over more than one day and a routine daily calibration error test is performed before completing the linearity check, the monitor may be adjusted after the daily calibration error test, but only in a routine manner (i.e., so as to match (to the extent practicable) the calibration gas tag value). For flow RATAs, hands-off also means that the polynomial coefficients or K factor(s) must not be changed, either during the test at a particular load level or in-between load levels. The rule requires a three-load flow RATA if the polynomials or K-factor(s) are adjusted.

References: Appendix B, Section 2.1.3

Key Words: Calibration error, Linearity, RATAs

History: First published in October 1999 Revised Manual

Question 11.5 RETIRED

Question 11.6

Topic: QA Plan Format

Question: Does our QA Plan need to have a standard format? We refer to other documents, such as manuals provided by vendors, but the information in these documents is not included in the QA Plan. Do we need to retype/reword the information in the manual and include it in the QA Plan?

Answer: No standard format is required and it is not necessary to retype the information from the other manuals. The QA Plan should reference the other documents and these documents should be available on site.

References: Appendix B, Section 1

Key Words: Quality assurance

History: First published in March 2000, Update #12

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SECTION 12
CERTIFICATION:
ADMINISTRATIVE/PROCEDURAL

Page

Question 12.1

Topic: Monitoring Plan

Question: For an initial monitoring plan, do we use current conditions or conditions that will be applicable at the time of the certification tests?

Answer: Since the initial monitoring plan is submitted prior to the certification tests, the plan should reflect the expected conditions at the time when the certification tests will be conducted. However, if there should be a change in any of these conditions prior to the testing, the owner or operator is required under § 75.53(b) to update the monitoring plan accordingly.

References: § 75.53

Key Words: Certification tests, Monitoring plan

History: First published in Original March 1993 Policy Manual; revised in October 1999 Revised Manual

Question 12.2 RETIRED

Question 12.3

Topic: Pre-certification Requirements

Question: Is there a required minimum run time for a CEM system before certification?

Answer: With the exception of opacity monitors being certified in accordance with Performance Specification (PS) 1 from Appendix B of 40 CFR Part 60, there is no minimum run time prior to certification. Opacity monitors being certified in accordance with PS 1 are subject to a 168-hour conditioning period that precedes a 168-hour operational test period.

References: 40 CFR Part 60, Appendix B (PS 1)

Key Words: Certification tests, Opacity monitoring

History: First published in Original March 1993 Policy Manual

Question 12.4 RETIRED

Question 12.5 RETIRED

Question 12.6 RETIRED

Question 12.7 REVISED

Topic: Certification Applications

Question: May a utility submit certification applications separately for different CEM systems (e.g., SO_2 and NO_x) at one unit? If the utility unit submits one certification application, will EPA issue partial approvals?

Answer: Yes. The utility may choose to conduct certification activities separately. The utility would have to give proper (45-day) advance notice for each battery of tests, and would have 45 days after completion of each series of tests to submit the results. The 120-day review time would apply individually to each submission. However, the rule does require that for NO_x-diluent monitoring systems each component of the system be tested concurrently for certification.

EPA may also issue separate certification approvals in some cases where a utility submits one certification application for all the monitoring systems at one unit. For example, if EPA determines that all but one of the monitoring systems passed the certification requirements, then EPA would issue a disapproval only for the monitoring system (e.g., the SO_2 system) which failed, and would issue a certification approval for the rest (e.g., the NO_x-diluent system, flow monitor, CO_2 monitoring system, and opacity monitoring system).

References: § 75.20; Appendix A, Section 6.5

Key Words: Certification applications, Deadlines, EPA approvals

History: First published in Original March 1993 Policy Manual; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 12.8

Topic: Timing of Tests

Question: Must the 7-day calibration error test and the linearity test be conducted at the same time as the RATA?

Answer: No. In fact, EPA recommends that utility sources complete the required certification tests in the following order: the DAHS verification tests, the cycle/response time test, the linearity check, the 7-day calibration error test, and the RATA tests.

References: Appendix A, Section 6.1

Key Words: Calibration error, Certification process, Linearity, RATAs

History: First published in Original March 1993 Policy Manual

Question 12.9

Topic: Certification Testing

Question: If a company has personnel on staff with stack testing expertise, is it permissible for the company to conduct their own CEMS certification tests, rather than hiring an outside testing firm?

Answer: Yes. Section 75.20(c) requires that the owner or operator conduct certification tests; the owner or operator may use either company personnel or hired personnel from an outside testing firm to conduct these tests.

References: § 75.20(c)

Key Words: Certification tests

History: First published in May 1993, Update #1

Question 12.10 RETIRED

Question 12.11

Topic: Certification Application -- Paper Documentation

Question: It is easy to generate certification test results within a week or so in electronic format, but paper often takes much longer. Is there flexibility in the requirement for submission of the certification application 45 days after testing (especially for the extra paper copies)?

Answer: No. A complete application is due within 45 days. A unit will be out of compliance if it does not submit a complete application within 45 days. However, if a utility finds it cannot submit a complete application, then it would be prudent to submit the electronic data within the 45 day period and the hard copy information shortly thereafter. Note that EPA's 120 day review period will not begin until all paper documentation is received, thus completing the certification application. For recertification applications, the EPA Regional Office (and the applicable State and/or local agency) may waive the requirement to receive the hardcopy portion of the application. For both certification and recertification applications, the designated representative does not have to submit a hardcopy portion of the application to EPA Headquarters.

References: § 75.59, § 75.63

Key Words: Certification applications, Deadlines

History: First published in May 1993, Update #1; revised July 1995, Update #6; revised in October 1999 Revised Manual

Question 12.12 REVISED

Topic: Certification Test Notification

Question: From what date do we count back to determine the date of the certification testing notification? Is it based upon the date of the RATA?

Answer: Section 75.61 (a) requires that notification of testing be given twenty-one (21) days prior to the first day upon which the first certification test is begun. As a general rule, it is the date of the first test that matters, not the date of one particular test such as the RATA or 7-day calibration error test. However, if the regulatory agency is interested only in the date of the RATA (for purposes of observing the test), then, by mutual agreement between the agency and the affected facility, the 21-day advance notification may be reckoned from the scheduled date of the RATA.

References: § 75.61(a)

Key Words: Certification process, Notice

History: First published in November 1993, Update #2; revised in October 2003 Revised Manual

Question 12.13 REVISED

Topic: Construction of a New Stack, Flue, SO_2 Scrubber, or Add-on NO_x Control -- Certification Timeline

Question: How much time following a CEMS installation at a new stack, flue, SO_2 scrubber or add-on NO_x control device do we have to certify the operation of the CEMS?

Answer: In accordance with the provisions of § 75.4(e) , all certification testing of the CEMS installed at the new location must be complete within "90 unit operating days or 180 calendar days (whichever occurs first) after the date that the emissions first exit to the atmosphere through the new stack, flue, flue gas desulfurization system or add-on NO_x emission controls . . ."

References: § 75.4(e)

Key Words: Certification tests, Control devices, New stack

History: First published in November 1993, Update #2; revised July 1995, Update #6**;** revised in October 2003 Revised Manual

Question 12.14 REVISED

Topic: Certification of Excepted Methods

Question: How does the certification process work for approved exceptions to CEMS (the procedures in Appendices D and E of 40 CFR Part 75)?

Answer: The designated representative submits a **monitoring plan** at least 45 days prior to beginning certification testing (i.e., the date of the first test for either the Appendix D or the Appendix E method). The initial submission of the monitoring plan should include the monitoring methods to be used, data supporting the accuracy of fuel flow meters, schematic diagrams showing fuel flowmeter and oil sampling locations, as well as CEMS and COMS locations, and capacity factor and fuel usage data to demonstrate applicability of the monitoring methods to be used from Appendix D or E.

The designated representative also submits a **certification testing notification** to EPA and the State or local agency at least 21 days prior to beginning certification

testing for Appendix E only (no test notification requirements apply for Appendix D, including fuel flowmeter calibration testing). For a unit using the procedures in Appendix E, the certification testing notification includes the testing procedures that will be used in the NO_x emission rate/load correlation (including the planned load levels, fuels, and excess O_2 levels).

Provisional certification also applies for Appendix D or E procedures. This would apply upon successful completion of all test results included in the certification application, including test results demonstrating the flowmeter accuracy and the results of any DAHS verification tests developed for these methods.

The designated representative submits a **certification application** within 45 days after completing certification testing to EPA and to the appropriate State or local agency. This certification application includes results of any DAHS verification tests and a final monitoring plan, including: test data supporting the fuel flowmeter accuracy; testing results from the correlation of NO_x emission rate and load (for Appendix E procedures only); and data for deriving the F-factor used (for Appendix E procedures only).

As with certification of a CEMS, EPA has a 120 day period for review of a certification application for an excepted monitoring method. The 120 day period starts upon EPA's receipt of a complete certification application, including the final monitoring plan with all test results for the methods in Appendices D and E, and test results for the DAHS.

References: § 75.20(g), § 75.63, Appendices D and E

Key Words: Certification process, Excepted methods

History: First published in November 1993, Update #2; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 12.15 RETIRED

Question 12.16 RETIRED

Question 12.17

Topic: 7-day Calibration Error Test

Question: Must a unit operate continuously for all 168 hours of the 7-day calibration error test during certification?

Answer: No, for purposes of Part 75. (Under many other programs, such as the New Source Performance Standards, a unit must operate continuously for 168 hours while the calibration drift test for certification is performed.)

According to Section 6.1 of Appendix A, units must be operating when measurements are made. The same section of Appendix A of Part 75 specifies that units may be tested on non-consecutive calendar days (but the certification test must be performed on seven consecutive unit operating days). This allows certification testing of CEMS on peaking and intermediate load units at actual stack conditions and at conditions similar to those that will be encountered later after certification.

When a unit has been shutdown, the monitor readings may drift. In order to improve monitor accuracy when the unit is again operating and to allow the monitor to pass the 7-day calibration error test, it is permissible to check the calibration of the instrument and adjust it while the unit is still shutdown. Calibration tests during shutdown periods are not to be reported as part of the 7-day calibration error test data. When a unit comes back on-line after an outage, it is recommended that the 7-day calibration error test not be resumed until the unit operation has stabilized. This allows the monitor to measure while its probe is exposed to normal flue gas moisture and temperature conditions.

References: Appendix A, Section 6.1

Key Words: Calibration error, Certification tests

History: First published in November 1993, Update #2

Question 12.18 REVISED

Topic: Fuel Flowmeter Calibration Methods

Question: Has EPA approved any calibration methods for fuel flowmeters besides the standards listed in Section 2.1.5.1 of Appendix D?

Answer: Yes.To obtain permission to use other methods, designated representatives should combine the information required for a petition under § 75.23 and § 75.66(c) with the monitoring plan and certification application. The Agency will then review the petition as part of the certification application.

References: § 75.20(g)(1)(i), § 75.23, § 75.66; Appendix D, Section 2.1.5.1, Question 12.26

Key Words: Excepted methods, NO_x monitoring, SO_2 monitoring

History: First published in October 1994, Update #3; revised July 1995, Update #6; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 12.19

Topic: Accuracy Specifications for Gas Fuel Flowmeters

Question: What is the flowmeter accuracy specification for a gas flowmeter for use in Appendix D or E of Part 75?

Answer: Section 2.1.5 specifies an accuracy specification of 2.0 percent of the upper range value (URV). Section 2.1.2 of Appendix D requires that each fuel flowmeter used to meet the requirements of the protocols in Appendix D and Appendix E satisfy this accuracy specification, except for certain situations as provided in Section 2.1.4 of Appendix D.

References: Appendix D, Section 2.1.1

Key Words: Excepted methods, NO_x monitoring, SO_2 monitoring

History: First published in September 1994, Update #3; revised in October 1999 Revised Manual

Question 12.20 RETIRED

Question 12.21 RETIRED

Question 12.22 RETIRED

Question 12.23 REVISED

Topic: Fuel Flowmeter Certification

Question: For initial certification of fuel flowmeters, how old may calibration data be and still be considered valid for certification test purposes?

Answer: Initial certification test results for accuracy of a fuel flowmeter should be no more than a year old. Except for orifice, nozzle, and venturi-type flowmeters, EPA generally expects utilities to retest or recalibrate their fuel flowmeters annually (or once every four fuel flowmeter QA operating quarters for intermittently operated units). This requirement may be extended to once every five years where a source conducts fuel flow-to-load testing under Section 2.1.7 of Appendix D. These exceptions to annual retesting or recalibration are intended to provide reduced burdens for ongoing quality assurance requirements for infrequently operated units or where the unit substitutes the fuel flow-to-load test for a direct calibration.

For orifice, nozzle, and venturi-type meters, the initial calibration includes physical installation of the orifice, which will not change; therefore, it is appropriate to use that initial installation and calibration information to apply for initial certification of an orifice, nozzle, or venturi fuel flowmeter, even if it is more than a year old. If the orifice, nozzle, or venturi-type flowmeter is more than a year old, perform a visual inspection of the meter and a calibration of the pressure and temperature transmitters before using the fuel flowmeter to provide data for the Acid Rain Program.

References: § 75.20(g)(1); Appendix D, Sections 2.1.5 through 2.1.7

Key Words: Calibration error, Certification tests, Excepted methods

History: First published in July 1995, Update #6; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 12.24 RETIRED

Question 12.25 RETIRED

Question 12.26

Topic: Alternatives to ASTM/ASME Methods Incorporated by Reference

Question: I want to use an alternative method for calibrating my fuel flowmeter that is not listed in Section 2.1.5.1 of Appendix D. What do I need to submit to EPA to get the alternative procedure approved?

Answer: Submit the information required under § 75.23 and § 75.66(a) and (c) for an alternative to an ASTM method or other standard incorporated by reference. This includes: (1) a description of why the prescribed Part 75 method (or methods) is not being used; (2) a description and diagram(s) of any equipment and procedures used in the proposed alternative; (3) information demonstrating that the proposed alternative produces data acceptable for use in the Acid Rain Program, including accuracy and precision statements, NIST traceability certificates or protocols, or other supporting data; and (4) the designated representative certification statements required by § 72.21.

The procedures and description of equipment should be sufficiently detailed that an observer would be able to tell if the procedures and equipment were being used.

Note that it is the submitter's responsibility to demonstrate that the alternative to the standard in Part 75 will give equivalent results and is acceptable. If any of the elements discussed above are missing, EPA may request further information or even disapprove the petition.

References: § 75.23, § 75.66(c); Appendix D, Section 2.1.5.1; Question 12.18

Key Words: ASTM methods, Calibration, Petitions

History: First published in July 1995, Update #6; revised in October 1999 Revised Manual

Question 12.27 REVISED

Topic: Fuel Flowmeters -- Accuracy Information

Question: What information must I submit with my certification or recertification application to demonstrate accuracy of a fuel flowmeter?

Answer: Submit data and calculations to demonstrate that the fuel flowmeter meets an accuracy of 2.0% of the upper range value. When calibration is done using one of the allowable methods in Section 2.1.5.1 or by comparison against a reference flowmeter, as described in Section 2.1.5.2 of Appendix D, include:

(1) Range of the instrument at which calibration was conducted (usually expressed as a percentage of the upper range value). Data should include the full scale value and at least two other values.

(2) The upper range value--URV (full scale).

(3) Readings from the flowmeter being tested (in lbs/min, scfh, or other appropriate units).

(4) Readings for the reference device (same units as the flowmeter).

(5) Error or accuracy calculations, as a percentage of URV.

If possible, present data in a table, such as Table D-1 in Appendix D to Part 75.

When using a NIST traceable procedure, include certificates to show that equipment currently meets NIST standards.

For orifice, nozzle, and venturi-type flowmeters, you may certify by design. If you select this option, provide a certificate from the vendor showing that the fuel flowmeter meets the requirements of AGA Report No. 3. Also provide calibration data to indicate that the pressure, temperature, and differential pressure transmitters/transducers meet the 2.0% flowmeter accuracy requirement (see Section 2.1.6.1 of Appendix D). Provide this information with the certification or recertification application.

References: § 75.59(b), § 75.63; Appendix D, Section 2.1.6.1 and Table D-1

Key Words: Calibration error, Certification applications, Excepted methods, Fuel sampling

History: First published in November 1995, Update #7; revised in October 1999 Revised Manual

Question 12.28 RETIRED

Question 12.29 RETIRED

Question 12.30 REVISED

Topic: Electronic Submittal of Part 75 Monitoring Plan and Certification/Recertification Test Results

Question: Part 75 specifies in various places that the electronic portions of monitoring plans and certification and recertification applications are to be sent to the Administrator. Please explain EPA's administrative process for receiving these electronic submittals.

Answer: EPA will post the most current process for receiving electronic monitoring plan updates and the results of certification and recertification tests on the CAMD website under the topic of Part 75 Administrative Processes.

http://www.epa.gov/airmarkets/monitoring/submissions/index.html.

The process for when submissions are to be made is also explained in the following series of questions and answers:

Q1: When am I required to submit monitoring plan information under Part 75?

A1: Part 75 monitoring plan submittals are required as follows:

- ≥ 45 days prior to commencement of initial certification testing
- Whenever monitoring plan information is updated (e.g., analyzer make, model and serial numbers, span and range changes, etc.)
- With certification and recertification applications (≤ 45 days after completion of tests)
- With Quarterly Data Files

These requirements are summarized in Table 1, below.

Q2: For Part 75 monitoring plan submittals, what hardcopy and electronic monitoring plan information is required, and to whom should it be sent?

A2: For units with CEMS, the electronic and hardcopy portions of the monitoring plan are defined in § 75.53, paragraphs (e)(1) and (e)(2), respectively. For Appendix D and E units and for low mass emission (LME) units, the electronic and hardcopy monitoring plan requirements are found in § 75.53(f). The electronic data elements listed under § 75.53, paragraphs (e)(1) and (f) correspond to the 500-level EDR records.

Section 75.62 explains when the electronic and hardcopy portions of the monitoring plan are to be submitted (see Table 1, below). When submittal of the electronic portion is required, it is to be submitted to EPA's Clean Air Markets Division (CAMD). CAMD will forward the electronic monitoring plan and any automated review feedback to the appropriate

State and EPA Regional office and the State or local agency to prevent different monitoring plan versions from circulating among the agencies. When submittal of the hardcopy information is required, send it to both the appropriate EPA Regional office and the State or local agency. Do not submit the hardcopy monitoring plan to CAMD.

Q3: When submittal of the electronic monitoring plan is required, is there a specific location within CAMD where the information is to be sent?

A3: Yes. Quarterly report submittals, of course, are sent electronically to the EPA mainframe computer. For the other submittals described in the answer to Q1, above, send the electronic monitoring plan information and (if applicable) the certification or recertification test results to CAMD in the manner specified on the CAMD website. When an electronic submittal is received, EPA distributes copies to the appropriate individuals to ensure that any monitoring plan changes are reflected in the database and certification and recertification applications are reviewed in a timely manner.

Q4: When I submit an electronic monitoring plan which EDR record types must I submit?

A4: For monitoring plan submittals send in the following EDR records:

- RT 100
- Complete, up-to-date monitoring plan (500-level EDR records)
- RTs 900 and 901 (certification statement and signature)
- RT 999 to identify the CEMS contact person (optional)

For certification or recertification application, you must include the electronic certification or recertification test results, as well as the monitoring plan records associated with your submittal. The following EDR records should be included for all certification and recertification electronic submittals:

- RT 100
- Complete, up-to-date monitoring plan (500-level EDR records)
- Electronic certification or recertification test results (applicable 600-level EDR records)
- RTs 900 and 901 (certification statement and signature)
- RT 999 to identify the CEMS contact person (optional)

Q5: If I update my electronic monitoring plan, both in the quarterly report and by sending the information as described in Q3 above, am I still required to send hardcopy updates of Tables A, B, C, and D to EPA and to the State?

A5: No. Electronic monitoring plan information submitted in the quarterly report and as directed in Q3, above, is considered by EPA to be official

and no additional hardcopy submittals are required. EPA has discontinued the use of hardcopy Tables A, B, C, and D because they are outdated. Therefore, hardcopy Tables A, B, C, and D and should no longer be used for monitoring plan submittals or updates.

EPA or State personnel reviewing the electronic monitoring plan submittals can obtain an updated, hardcopy equivalent of the old monitoring plan Tables A, B, C, and D, by using the Monitoring Data Checking (MDC) software developed by CAMD. EPA's automated feedback (described in the answer to Q2) should include the monitoring plan printout report that replaced Tables A, B, C, and D.

Q6: If I submit electronic monitoring plan information and certification or recertification test results as described in Q3, above, must I also include this information in a quarterly report submittal?

A6: Yes. You must ensure that all monitoring plan information and updates sent to the e-mail addresses above are reflected in the subsequent quarterly report(s). You must also send certification and recertification test results with the appropriate quarterly report submittal (see EDR Version 2.1/2.2 Reporting Instructions, Section III.D, introductory text preceding RT 600, and also refer to section II.C in Appendix C of that document).

Table 1: Monitoring Plan Submittal Requirements

Submittal Requirement	Rule Citation(s)	Contents of Submittal	Submit When?	Submit to Whom?
Monitoring Plan Submittal (General Requirements)	§ 75.62 and § 75.63	Complete electronic and hardcopy monitoring plan[1]	≥ 45 days prior to commencement of initial certification testing	Electronic portion to CAMD Hardcopy portion to EPA Region, State
		Complete electronic monitoring plan and any hardcopy portions that have changed	With each certification application (≤ 45 days after completing all tests)	Electronic portion to CAMD Hardcopy portion (if applicable) to EPA Region, State
		Complete electronic monitoring plan and any hardcopy portions that have changed	With each recertification application (≤ 45 days after completing all tests)	Electronic portion to CAMD Hardcopy portion (if applicable) to EPA Region, State

(cont.)

Table 1: Monitoring Plan Submittal Requirements (cont.)

Submittal Requirement	Rule Citation(s)	Contents of Submittal	Submit When?	Submit to Whom?
Monitoring Plan Submittal (General Requirements) (cont.)	§ 75.62 and § 75.63 (cont.)	Complete electronic monitoring plan	In each quarterly emissions report	CAMD
		Portions of the hardcopy monitoring plan that have changed, following "any other event"	≤ 30 days after the "event"	EPA Region, State
Monitor Plan Updates (General)	§ 75.53(b) and § 75.73(c)(2)	Updated electronic or hardcopy monitoring plan information (as applicable)	Whenever change(s) to monitoring system(s) affect monitoring plan information	Electronic portion to CAMD Hardcopy portion (if applicable) to EPA Region, State
Monitor Plan Updates (Span and Range)	Appendix A, Sections 2.1.1.5(c), 2.1.2.5(c), 2.1.3.3, and 2.1.4.3(c)	Updated electronic or hardcopy monitoring plan information (as applicable)	In the quarter in which the change(s) become effective	Electronic portion to CAMD Hardcopy portion (if applicable) to EPA Region, State

[1] Beginning on April 1, 2000, the electronic and hardcopy portions of the monitoring plan are as specified in § 75.53(e) for CEMS and in § 75.53(f) for Appendix D and E units, LME units, etc. In general, the electronic portion of a monitoring plan refers to data elements that are required to be reported in the 500-level EDR records. The hardcopy portion of the monitoring plan includes schematics, blueprints, test protocols, data flow diagrams, technical justifications, and supporting data to qualify for certain regulatory options, etc.

References: § 75.53, § 75.62, § 75.73(c); Appendix A, Sections 2.1.1.5(c), 2.1.2.5(c), 2.1.3.3, and 2.1.4.3(c), Revised EDR Version 2.1/2.2 Reporting Instructions

Key Words: Certification applications, Electronic data reporting, Monitoring plan, Recertification

History: First published in December 2000, Update #13; revised in October 2003 Revised Manual

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SECTION 13
RECERTIFICATION

Page

Question 13.1 RETIRED

Question 13.2 RETIRED

Question 13.3

Topic: Recertification with Backup Monitors

Question: Can we use a certified backup monitor to recertify our primary monitor?

Answer: Yes, under certain conditions. A certified backup pollutant concentration or diluent monitor could be used to do the RATA test for recertification, provided that the certified backup monitor is used as an instrumental reference method (Methods 6C, 7E, 3A). Otherwise, the backup monitor could not be used to conduct a relative accuracy test for recertification.

References: 40 CFR Part 60, Appendix A

Key Words: Backup monitoring, Recertification, Reference methods

History: First published in May 1993, Update #1

Question 13.4 REVISED

Topic: Monitoring Plan Requirements for Component/System Replacements

Question: If I replace the analyzer for an SO_2 or NO_x system, what are the requirements for assigning new component IDs or system IDs?

Answer: The requirements in this situation depend on whether the utility reports any test data for the new replacement analyzer which overlaps with emissions or test data reported from the previously certified analyzer.

(1) <u>Requirements for Analyzer Replacement with Overlapping Use</u>

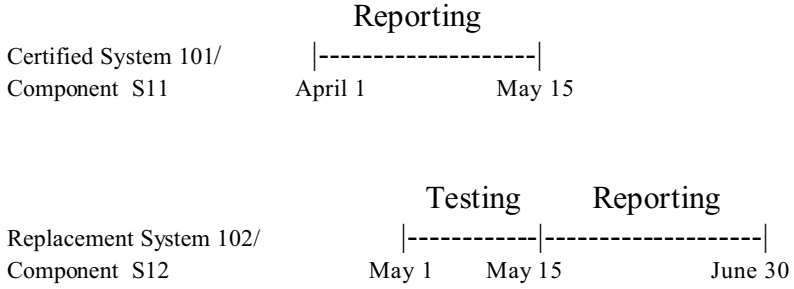
If a utility replaces an analyzer (whether or not the analyzer is the same brand or model as the previously installed analyzer) and certification testing of the second analyzer is performed during hours in which the first analyzer is used to report test or emissions data, this is a case of data overlapping, and the utility must assign a new component ID and a new monitoring system ID to the second analyzer and set of associated components.

For example, suppose that a utility intends to replace component S11 in monitoring system 101 with a new analyzer of the same model. Suppose further that testing of the new analyzer begins in the 2nd quarter and that the utility continues to use and report quality-assured data from system 101 while testing the replacement analyzer. Then, after the new analyzer is certified, it is used for emissions reporting, starting in the middle of the 2nd quarter (see diagram below).

In this case, two separate, active monitoring systems (i.e., the old system and the new one) must be defined in the monitoring plan, as shown in the diagram below, because some of the reported quarterly emissions data was recorded by the old analyzer and some of it was recorded by the new one, and the new analyzer was tested during hours when the old one was being used to report emissions data. The replacement analyzer must also be assigned a new component ID.

For the new monitoring system, report a status code of "A" (i.e., "add") in column 16 of RT 510 of the quarterly report. For *each* component of the old system, report status code "C" in RT 510, column 16 and enter the last date on which the system was used for reporting in column 108. Then, in the next quarter, show the old system as deleted (i.e., report a status code of "D" for all components) and the new system as unchanged (i.e., status code "U" for all components) in RT 510 of the quarterly report.

Example of Overlapping Data



(2) Analyzer Replacement Without Overlapping Use

Example 1: Suppose that a utility removes its SO_2 analyzer (component # S21 in monitoring system # 202—see diagram below) from service at the end of a calendar quarter, and then certifies a new replacement analyzer in the following quarter and begins reporting data with it. Since there is no data overlapping in this case, the utility may use one of two approaches:

(a) Define a new, unique, SO_2 monitoring system ID and a new SO_2 component ID in the monitoring plan. In the first quarter that the new system is used, assign a status code of "D" (delete) to the old monitoring

system and assign a status code of "A" (add) to the new system in column 16 of RT 510 in the quarterly report; or

(b) Retain the existing monitoring system and component ID numbers. In this case, assign a status code of "C"in RT 510 to the analyzer component that is changed out, and enter the new manufacturer, model and serial number information for the replacement analyzer. Since you are retaining the same system ID, do *not* change the system's "first reporting date" in column 100 of RT 510.

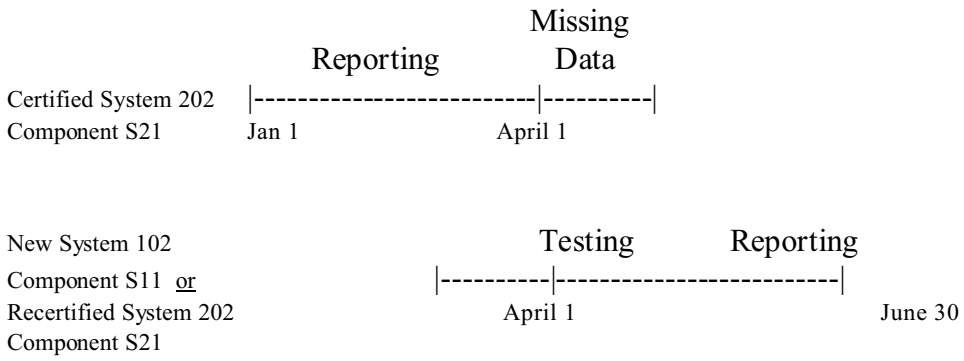
Example 2: Suppose that in Example 1 above, the transition from the old analyzer to the new one occurs within the same quarter, rather than at a quarter boundary. In other words, suppose that component S21 of system 202 is used for half the quarter and taken out of service, and the replacement analyzer is then installed, tested, and used to report data for the remainder of the quarter. In this case, you may:

- Define new, unique system and component ID in the monitoring plan. If you select this option, you must show both the old and new systems in the monitoring plan for the current quarter, since both systems were used for data reporting. For the new system, report a status code of "A" in column 16 of RT 510. For all components of the old system, report a status code of "C" in RT 510, and add a system "closeout date" in RT 510, column 108. Then, in the next quarterly report, show the old system with a status code of "D" to indicate that it is being deleted, and show the new system with a status code of "U" (i.e., "unchanged"); or

- Retain the existing monitoring system and component ID numbers, and follow the instructions under Example 1, paragraph (b), above.

Refer to the diagram below. When there is a gap in the quality-assured data record between the last date on which the previously-certified system is used and the date on which the new system (or recertified system) begins to report valid data apply the appropriate missing data routines until the new (or recertified) monitoring system is able to provide quality-assured data. Note that the period of missing data may be shortened considerably if the conditional data validation procedures of §75.20 (b)(3) are applied during the certification or recertification testing.

Example of Non-overlapping Data



You may reuse a system or component ID for a replacement system for the same parameter (i.e., SO_2 to SO_2) in a non-overlapping case as stated above. However, you may not reuse a system or component ID for a replacement component/system associated with a different parameter (i.e., SO_2 to NO_x), at the same unit or stack.

Finally, any time that an analyzer is replaced, you must report the test results in the quarterly report and must report RT 556, describing the certification or recertification event.

References: § 75.53, § 75.61, §75.20 (b)(3)

Key Words: Monitoring plan, Recertification, Conditional data validation

History: First published in March 1995, Update #5; revised in October 1999 Revised Manual; revised in March 2000, Update #12; revised in October 2003 Revised Manual

Question 13.5 REVISED

Topic: Monitoring Plan Requirements for DAHS Changes

Question: What are the requirements for assigning new system and component IDs for DAHS version upgrades and DAHS vendor or platform changes?

Answer: It is not necessary to change any monitoring system or component IDs for DAHS version upgrades or for DAHS vendor or platform changes.

In the electronic report for the quarter in which the software version is upgraded or the new DAHS is first used for reporting, provide the updated manufacturer and version information for the DAHS component in RT 510 and use a status code of "C" in column 16 to indicate that the DAHS component was changed. Also provide RT 556 , describing the changes to the DAHS and indicating the

date on which the required diagnostic testing of the new DAHS component was completed.

References: § 75.20, § 75.61

Key Words: DAHS, Diagnostic testing, Monitoring plan

History: First published in March 1995, Update #5; revised in March 2000, Update #12; revised in October 2003 Revised Manual

Question 13.6 RETIRED

Question 13.7 REVISED

Topic: Quarterly Reporting of Reasons and Corrective Action for Missing Data Periods

Question: Has EPA considered an alternative, streamlined approach to report the reasons and corrective actions for missing data periods in the electronic quarterly report ?

Answer: Yes. EPA has received many comments and suggestions regarding these submissions. In response, EPA established optional EDR record type 550 to provide a format for reporting electronically the reasons for and actions taken to resolve missing data periods. This record type allows a source to identify the reason missing data are being used (using a designated code and short supplementary narrative field) and a description of the corrective action taken. Note that even though electronic reporting of the reasons for missing data in RT 550 is optional, affected sources must still record this information (see § 75.57 (h)).

References: § 75.57(h), § 75.64(a)(2)(vi)

Key Words: Electronic report formats, Reporting

History: First published in March 1995, Update #5; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 13.8 RETIRED

Question 13.9 RETIRED

Question 13.10 RETIRED

Question 13.11 RETIRED

Question 13.12 RETIRED

Question 13.13 RETIRED

Question 13.14 REVISED

Topic: Notification Requirements for Recertification Events

Question: Should a utility notify the State and EPA Regional Office of a recertification event? How much advance notice is required?

Answer: Yes, generally speaking, utilities must notify the State and EPA Regional Office of a recertification event. However, for partial recertifications, where less than a full battery of recertification tests is required, the State or Region (or both) may, in accordance with § 75.61(a)(1)(iv), issue a waiver from the notification requirement of § 75.61 (a)(1)(ii).

For recertifications, the notification requirements are as follows:

- For *full* recertifications (where a complete battery of recertification tests is required), § 75.61(a)(1)(i) states that the source must provide notification of testing at least 21 days prior to the first scheduled day of testing. Notification may be provided either in writing, by telephone, or by E-mail. In cases of emergency, § 75.61(a)(1)(i) also provides that "in emergency situations when full recertification testing is required following an uncontrollable failure of equipment that results in lost data, notice shall be sufficient if provided within 2 business days following the date when testing is scheduled."

- For *partial* recertifications (where less than a full battery of recertification tests is required), § 75.61(a)(1)(ii) states that the source must notify the EPA Regional Office and the State Office in writing, by telephone, or by E-mail at

least 7 days prior to the first scheduled day of testing. For emergency situations, § 75.61(a)(1)(ii) has the same notification provision as § 75.61(a)(1)(i).

Note that State and local environmental agencies may have notification requirements that differ from those in § 75.61(a), with which the utility must also comply.

References: § 75.20(b)(2), § 75.61(a)(1)(i), (ii) and (iv)

Key Words: Notice, Recertification

History: First published in July 1995, Update #6; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 13.15 REVISED

Topic: Diagnostic and Recertification Tests for Flow Monitor Component Replacements

Question: What tests are required when a major component of a flow monitoring system is replaced?

Answer: A major component of a flow monitoring system is any part of the system that is involved in the direct sensing of the flow velocity or in calculating the total volumetric flow rate. Examples of major flow components include sensors, pitot tubes, transducers, thermal bridges, and microprocessors. Non-major components include power supplies, blower motors and other inactive components not involved in the direct sensing of flow or in the subsequent calculations.

When a major component of a flow monitoring system is replaced, the component replacement may significantly affect the monitor's ability to accurately measure flow rate, and recertification may be required in accordance with § 75.20(b) -- see also Question 13.21, below. For this reason, EPA recommends that, to the extent practicable, replacement of major flow system components be done at the time of scheduled semiannual or annual quality assurance RATAs, so that if recertification is necessary, a single RATA may be done for a dual purpose, i.e., to satisfy both the recertification and routine QA requirements.

When a major component is replaced, the owner or operator may either perform recertification testing of the flow monitor or may, instead, perform an abbreviated flow-to-load ratio diagnostic test, as described in Section 2.2.5.3 in Appendix B to Part 75. If the flow-to-load diagnostic test is passed, no further testing of the flow monitor is required. However, if the test is failed, RATA testing is required, in accordance with section 2.2.5.3 (c).

When the abbreviated flow-to-load ratio diagnostic test is performed, operation at normal load is preferred. However, if normal load is unattainable at the time of the component replacement, the diagnostic may be performed at another load. If this becomes necessary, then the appropriate pre-replacement RATA information (mean reference method flow rate, load and, if necessary, % CO_2) must be obtained for that load level in order to perform the diagnostic test properly.

References: § 75.20(b)(1); Appendix B, Section 2.2.5.3

Key Words: Diagnostic testing, Flow monitoring, RATAs, Recertification

History: First published in June 1996, Update #9; revised in March 1997, Update #11; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 13.16

Topic: Flow Monitor Multiple Point Sensor Replacement

Question: Suppose that a utility has a thermal or differential pressure-type flow monitor with multiple point sensors, and one of the sensors must be replaced. May the abbreviated flow-to-load ratio diagnostic test described in Question 13.15 be used to validate data from the flow monitoring system in the period extending from the removal of the bad sensor until a new sensor can be installed? After the new sensor is installed, does the diagnostic test have to be repeated?

Answer: If, following the removal of the bad sensor, a probationary calibration error test of the monitoring system is passed and the abbreviated flow-to-load ratio diagnostic test is performed and passed, then data from the flow monitor may be considered valid from the hour of the probationary calibration error test until the new sensor is installed. However, both the probationary calibration error test and the diagnostic test must be repeated following the sensor replacement, to verify that the new component is working and has not significantly affected the monitoring system's ability to accurately measure flow rate. If the post-replacement diagnostic test is failed, the flow monitor is considered to be out-of-control. Data from the monitoring system are invalidated back to the hour of the post-replacement calibration error test and a single-load or 3-load RATA (as applicable) must be passed to bring the monitor back in-control (see Section 2.2.5.3(c) in Appendix B). Data validation for the RATA shall be done in accordance with Section 2.3.2 of Appendix B. The RATA is considered to be a recertification unless the only change to the monitor required to bring it back into control is adjustment of the polynomial coefficients or K factor(s) (see § 75.20(b)).

References: § 75.20(b), (b)(1), and (b)(3); Appendix B, Sections 2.2.5.3 and 2.3.2

Keywords: Diagnostic testing, Flow monitoring, RATAs, Recertification

History: First published in March 1997, Update #11; revised in October 1999 Revised Manual

Question 13.17 REVISED

Topic: Reporting of Flow Monitoring Diagnostic Tests

Question: When the flow-to-load ratio diagnostic test described in Question 13.15 is performed, what information, if any, must be reported to EPA, and what information can be kept on-site?

Answer: When a major flow monitoring system component is replaced and the diagnostic test described in Question 13.15 is performed, a RT 556 must be reported to EPA in the electronic emissions report for the quarter in which the diagnostic test is completed. For flow monitoring systems with multiple point sensors, if the diagnostic test is done twice (i.e., after removal of the bad sensor and after installation of the new sensor), submit a separate RT 556 for each test. Fill out RT 556 in accordance with the EDR Reporting Instructions provided by EPA.

A record of each major flow component replacement must be kept on-site in the maintenance log for the flow monitoring system, indicating the date and time of the replacement and the component replaced. The calculated results of the diagnostic test do not have to be reported to EPA but must be kept on-site, suitable for inspection.

References: § 75.20(b)(1); Appendix B, Sections 1.1.3 and 2.2.5.3; EDR v2.1/2.2 Reporting Instructions

Keywords: Diagnostic testing, Electronic report formats, Flow monitoring

History: First published in March 1997, Update #11; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 13.18 REVISED

Topic: Flow Monitoring Diagnostic Tests -- Reporting Conditionally Validated Data

Question: If the flow-to-load ratio diagnostic test described in Question 13.15 has not been completed by the reporting deadline for the quarter in which the change occurred, how should the period of conditional data be reported in the quarterly report?

Answer: If the diagnostic procedure described in Question 13.15, has not been completed by the time the quarterly report is generated for submission to the Agency, then the utility should use a suitable conditionally valid data flag, as described in § 75.20(b)(3)(ix). The appropriate conditionally valid data flag is found in column 51 of RT 556. Report a "C" in RT 556(51) to indicate that data from the flow monitor were conditionally valid at the end of the reporting quarter. See the EDR Reporting Instructions for a further discussion of conditional data validation and the use of RT 556.

References: § 75.20(b)(1), § 75.20(b)(3)(ix); EDR v2.1/2.2 Reporting Instructions

Keywords: Diagnostic testing, Flow monitoring, Reporting

History: First published in March 1997, Update #11; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 13.19 RETIRED

Question 13.20 REVISED

Topic: Appendix E Retesting

Question: Appendix E testing must be re-done once every 5 years (20 calendar quarters). Is this considered a recertification?

Answer: No. This is a standard QA test and is not considered a recertification. As specified in § 75.61(a)(5), the appropriate EPA and State agency offices must be notified at least 21 days in advance of scheduled Appendix E re-testing .

References: Appendix E, Section 2.2, § 75.61(a)(5)

Key Words: Excepted methods, Notice

History: First published in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 13.21 NEW

Topic: Recertification and Diagnostic testing

Background: According to § 75.20(b), "whenever the owner or operator makes a replacement, modification, or change in the certified continuous emission monitoring system or continuous opacity monitoring system that may significantly affect the ability of the system to accurately measure or record the SO_2 or CO_2 concentration, stack gas volumetric flow rate, NO_x emission rate, percent moisture, or opacity, or to meet the requirements of § 75.21 or appendix B to this part, the owner or operator shall recertify the continuous emission monitoring system or continuous opacity monitoring system according to the procedures in this paragraph."

Section 75.20(b) goes on to give the following examples of events which require recertification: "replacement of the analyzer; change in location or orientation of the sampling probe or site; and complete replacement of an existing continuous emission monitoring system or continuous opacity monitoring system. The owner or operator shall recertify a continuous opacity monitoring system whenever the monitor path length changes or as required by an applicable State or local regulation or permit."

Section 75.20(b)(1) states that "for all recertification testing, the owner or operator shall complete all initial certification tests in paragraph (c) of this section that are applicable to the monitoring system, except as otherwise approved by the Administrator."

Section 75.20(b) also states that "any change to a flow monitor or gas monitor for which a RATA is not necessary shall not be considered a recertification event. In such cases, any other tests that are necessary to ensure continued proper operation of the monitoring system (e.g., 3-load flow RATAs following changes to flow monitor polynomial coefficients, linearity checks, calibration error tests, DAHS verifications, etc.) shall be performed as diagnostic tests, rather than as recertification tests."

Question: Can EPA provide guidance on recertification and diagnostic test events and the appropriate quality-assurance tests for each event?

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Answer: The following Tables describe various events as either recertification events or diagnostic test events and outline the appropriate tests to be performed for each event. The Tables clarify which types of changes to a monitoring system may "significantly affect the ability of the system to accurately measure or record" emissions or flow rate and therefore require recertification testing and which types of changes require less rigorous diagnostic testing "to ensure continued proper operation of the monitoring system."

The recertification events listed in the Tables include the examples given in § 75.20(b) (i.e., analyzer replacements, complete monitoring system replacements, and changes in probe location). The Tables also identify other

events that EPA believes are likely to have the potential to significantly affect the accuracy of the monitoring system and that EPA therefore intends to treat as recertification events in applying § 75.20(b). These events are: (1) changing from in-stack dilution methodology to out-of-stack dilution methodology; and (2) replacement of the critical orifice in a dilution extractive system with an orifice of a different size.

Section 75.20(b)(1) specifies that for recertification, the same battery of tests which was performed for initial certification must be repeated, unless otherwise approved by the Administrator. The Tables reflect EPA's intention to require, for most of the recertification events listed in the Tables, the full battery of certification tests to be repeated. However, note that in a number of instances, EPA intends to exercise its authority under § 75.20 (b)(1) to require less than the full battery of tests.

The diagnostic test events listed in the Tables are the types of component replacements and repairs which are most commonly done on continuous monitoring systems. The Tables reflect EPA's intention to require only certain tests for these events. The diagnostic tests listed for each event are consistent with case-by-case determinations previously made by EPA and are tests that EPA believes are likely to be necessary to ensure continued proper operation of the monitoring system. To reduce the testing burden, EPA is allowing two simplified diagnostic tests to be performed in lieu of more rigorous tests, in some cases. The simplified diagnostic tests (which are described in greater detail in the Addendum following the Tables) are as follows:

(1) Abbreviated Linearity Check - This test may be performed in some instances, in lieu of a full linearity check. The test consists of a single sequence of injections of low (20-30% of span), mid (50-60% of span) and high (80-100% of span) calibration gases. The results of the test are acceptable if the linearity error (LE) does not exceed 5.0% of the reference gas tag value (or, alternatively, for low-emitters, if $|R - A|$ does not exceed 5 ppm), at all three gas levels. If these specifications are not met, a full, "hands-off" linearity check must be performed; and

(2) Alternative System Response Check - This test may be performed in some instances, in lieu of a cycle time test. The test can be done as part of a daily calibration error test, by using a timer (e.g., a stopwatch) to determine how long it takes for the monitor reading to reach 95% of the upscale calibration gas tag value. The results are acceptable if the 15 minute cycle time specification in Part 75, Appendix A is met.

EPA notes that § 75.63(a)(2) requires, for all recertification events, submission of a recertification application no later than 45 days after completion of the required tests. However, the regulations do not require submittal of a formal application for approval after completion of diagnostic tests.

Sections 75.64(a)(2), 75.65 and 75.63 (a)(2)(iii) require that recertification test results and the results of diagnostic tests be submitted electronically in the appropriate quarterly EDR report. In accordance with § 75.64(d) and with section III.C (19) of the EDR Version 2.1/2.2 Reporting Instructions, EDR record type 556 is used for this purpose. However, note that RT 556 is not required for events where the only required tests are daily calibration error checks and/or the simplified diagnostic tests described above.

EPA recognizes that this guidance cannot possibly address every situation that may arise and is not binding for situations that it does address. You may want to contact EPA concerning your specific situation, particularly in cases where:

(1) An event occurs that is not listed in the Tables, and you do not know which (if any) tests are required; or

(b) An event occurs which is listed in the Tables, but for which you believe, based on sound engineering judgment or other technical considerations, that the tests listed in the Tables may be inappropriate or unnecessary.

Note: EPA has not included a table for opacity monitors in this policy guidance. The proper recertification and diagnostic tests for a continuous opacity monitoring system (COMS) are the tests required by Performance Specification 1 (PS-1) in Appendix B of 40 CFR, Part 60 and by any other applicable state or Federal regulation(s).

Recertification and Diagnostic Test Policy for Dry-Extractive CEMS (1)

Description of Event	Event	RAT	7 Day Cal	Cycle Time	Linearity	Calibration	Submit	Comments
Permanently replace NO_x, SO_2, O_2 or CO_2 analyzer with like-kind analyzer as defined in Part 75 Policy Manual Question 7.22.	R	X	X		X	X	X	The rule indicates that the permanent replacement of an analyzer is a recertification event. EPA does not require the cycle time test in this case, since the analyzer is like-kind and the rest of the system is the same. Modify RTs 510 and 530 as necessary.
Permanently replace NO_x, SO_2, O_2 or CO_2 analyzer with new analyzer which does not qualify as a like- kind analyzer.	R	X	X	X	X	X	X	Modify RTs 510, and 530 as necessary. The rule indicates that the permanent replacement of an analyzer is a recertification event. Thus, all tests are required.
Replace or repair any of the following components:								
Photomultiplier	D				(5)	X	A	EPA will conditionally allow the abbreviated linearity check and the alternative system response check (see footnotes (5) and (6)) For repair or replacement of other major components that are not listed here (e.g., major components of new monitoring technologies or monitoring technology not addressed in this policy), contact EPA for a case-by case ruling.
Lamp	D				(5)	X	A	
Internal analyzer particulate filter	D			(6)		X	A	
Analyzer vacuum pump	D			(6)	(5)	X	A	
Capillary tube	D			(6)	(5)	X	A	
Ozone generator	D				(5)	X	A	
Reaction chamber	D				(5)	X	A	
NO_2 converter	D				(5)	X	A	
Ozonator dryer	D				(5)	X	A	
Sample Cell	D				(5)	X	A	
Optical filters	D				(5)	X	A	
Replace or repair circuit board	D				(5)	X	A	EPA will conditionally allow the abbreviated linearity check (see footnote (5))
Replace, repair or perform routine maintenance (as specified in the QA/QC plan) on a minor analyzer component, including, but not limited to:								For repair or replacement of other minor components that are not listed here perform a diagnostic calibration error test. EPA recommends that each facility develop its own list of major and minor components and document this list within their QA/QC plan. If there is uncertainty whether a component is major or minor, contact EPA for a case-by-case ruling.
PMT base	D					X		
O-rings	D					X		
Optical windows	D					X		
High voltage power supply	D					X		
Zero air scrubber	D					X		
Thermistor	D					X		
Reaction chamber heater	D					X		
Photomultiplier cooler	D					X		
Photomultiplier cooler fins	D					X		
DC power supply	D					X		
Valve	D					X		
Display	D					X		
Replace or repair signal wiring in CEMS shelter.	D					X		

Recertification and Diagnostic Test Policy for Dry-Extractive CEMS [1]

Description of Event	Event	RAT	7 Day Cal	Cycle Time	Linearity	Calibration	Submit	Comments
Replace or repair sample tubing in CEMS shelter.	D					X		EPA recommends performing both a pressure and vacuum leak check. The term "sample tubing" includes any sample or calibration tubing, the sample or calibration manifold, and the solenoid valve.
Replace or repair vacuum pump or pressure pump (not the analyzer pumps)	D					X		EPA recommends that a leak check be performed, also.
Replace or repair moisture removal system (chiller).	D					X		EPA recommends performing both a pressure and vacuum leak check.
Replace CEMS probe (same probe length and location).	D					X		EPA recommends performing both a pressure and vacuum leak check.
Change probe length and/ or location.	R	X		(6)		X	X	The rule indicates that a probe location change is a recertification event. EPA will conditionally allow the alternative system response check to be performed (see footnote (6)).
Routine probe filter maintenance (e.g., clean or replace coarse filter).	D					X		
Permanently replace umbilical line.	D	X		(6)		X	X	EPA recommends performing both a pressure and vacuum leak check. EPA believes that permanently replacing an umbilical line can introduce bias into the system. Therefore, a RATA is necessary. Sources can use conditional data validation to minimize loss of data.
Replace probe heater or sample line heaters.	D					X		
Change from extractive CEMS to in-situ CEMS.	R	X	X	X	X	X	X	The rule indicates that the permanent replacement of a system is a recertification event. Thus, all tests are required. Modify RTs 510, 520, and 530, as necessary
Change from extractive CEMS to dilution CEMS.	R	X	X	X	X	X	X	The rule indicates that the permanent replacement of a system is a recertification event. Thus, all tests are required. Modify RT's 510, 520, and 530, as necessary

(1) The relevant tests for CEMS are listed in § 75.20 (c)(1).
(2) "R" means a recertification event, and "D" means diagnostic test event.
(3) The 7-day calibration error test is not required for a “regular” non-redundant backup system (§ 75.20(d)(2)(i)).
(4) A calibration error is required after every repair or corrective maintenance event that may affect system accuracy (Part 75, Appendix B, section 2.1.3 (a)). If conditional data validation is used, a probationary calibration error test is required (§ 75.20(b)(3)(ii)).

(5) A full, "hands-off" linearity check is recommended. However, an abbreviated linearity check is conditionally allowed (see Appendix, below). If the abbreviated test is not passed, consider it to be an aborted linearity check and perform a full linearity check. Note: SO_2 and NO_x monitors with span values $\leq$ 30 ppm are exempted from linearity checks.

(vi) A full cycle time test is recommended. However, the alternative system response check is conditionally allowed. If the system response check is not passed, perform a full cycle time test.

(X) "X" means that this test is required or that EDR record type 556 must be reported.

(A) Report EDR record type 556 only if the full linearity check or cycle time test is performed. Keep the results of all successful alternative diagnostic tests on-site and do not report them to EPA.

Recertification and Diagnostic Test Policy for Dilution-Extractive CEMS (1)

Description of Event	Event	RAT	7 Day Cal	Cycle Time	Linearity	Calibration	Submit	Comments
Permanently replace NO_x, SO_2, O_2 or CO_2 analyzer with like-kind analyzer as defined in the Part 75 Policy Manual, Question 7.22.	R	X	X		X	X	X	The rule indicates that the permanent replacement of an analyzer is a recertification event. EPA does not require the cycle time test in this case, since the analyzer is like-kind and the rest of the system is the same. Modify RTs 510 and 530 as necessary.
Permanently replace NO_x, SO_2, O_2 or CO_2 analyzer with new analyzer which does not qualify as a like- kind analyzer.	R	X	X	X	X	X	X	The rule indicates that the permanent replacement of an analyzer is a recertification event. Thus, all tests are required. Modify RT's 510, 530 as necessary.
Replace or repair any of the following components:								
Photomultiplier	D				(5)	X	A	
Lamp	D				(5)	X	A	
Internal analyzer particulate filter	D			(6)		X	A	
Analyzer vacuum pump	D			(6)	(5)	X	A	EPA will conditionally allow the abbreviated linearity check and the alternative system response check (see footnotes (5) and (6))
Capillary tube	D			(6)	(5)	X	A	
Ozone generator	D				(5)	X	A	
Reaction chamber	D				(5)	X	A	For repair or replacement of other major components that are not listed here (e.g., major components of new monitoring technologies or monitoring technology not addressed in this policy), contact EPA for a case-by case ruling.
NO_2 converter	D				(5)	X	A	
Ozonator dryer	D				(5)	X	A	
Sample Cell	D				(5)	X	A	
Optical filters	D				(5)	X	A	
Replace or repair circuit board	D				(5)	X	A	EPA will conditionally allow the abbreviated linearity check (see footnote (5))
Replace, repair or perform routine maintenance (as specified in the QA/QC plan) on a minor analyzer component, including, but not limited to:								For repair or replacement of other minor components that are not listed here perform a diagnostic calibration error test. EPA recommends that each facility develop its own list of major and minor components and document this list within their QA/QC plan. If there is uncertainty whether a component is major or minor, contact EPA for a case-by-case ruling.
PMT base	D					X		
O-rings	D					X		
Optical windows	D					X		
High voltage power supply	D					X		
Thermistor	D					X		
Reaction chamber heater	D					X		
Photomultiplier cooler	D					X		
Photomultiplier cooler fins	D					X		
DC power supply	D					X		
Valve	D					X		
Display	D					X		

Recertification and Diagnostic Test Policy for Dilution-Extractive CEMS [1]

Description of Event	Event	RAT	7 Day Cal	Cycle Time	Linearity	Calibration	Submit	Comments
Replace or repair signal wiring in CEMS shelter.	D					X		
Replace or repair sample tubing in CEMS shelter.	D					X		EPA recommends performing both a pressure and vacuum leak check. The term "sample tubing" includes any sample or calibration tubing, the sample or calibration manifold, and the solenoid valve.
Replace or repair vacuum pump or pressure pump (not the analyzer pumps).	D					X		EPA recommends that a leak check be performed, also.
Replace critical orifice in dilution system with orifice of different size.	R	X	X	(6)	X	X	X	Changing the size of the critical orifice (outside the manufacturer's tolerances for individual orifices) will significantly change the dilution ratio, may cause moisture problems and could introduce additional bias into the CEM system. Therefore, recertification testing must be performed.
Replace critical orifice in dilution system with orifice of the same size (within the manufacturer's specified tolerance).	D				(5)	X	A	EPA will conditionally allow the abbreviated linearity check (see footnote (5)).
Disassemble and reassemble dilution probe for maintenance or service.	D				(5)	X	A	EPA recommends performing both a pressure and vacuum leak check. EPA will conditionally allow the abbreviated linearity check (see footnote (5)).
Permanently replace umbilical line.	D	X		(6)		X	X	EPA believes that permanently replacing an umbilical line can introduce bias into the system. Therefore, a RATA is necessary. Sources can use conditional data validation to minimize loss of data. EPA recommends performing both a pressure and vacuum leak check.
Replace CEMS probe (same probe length, location and dilution ratio).	D			(6)	(5)	X	A	Potential non-linear response with the new probe requires a linearity check. EPA will conditionally allow the abbreviated linearity check and the alternative system response check to be performed (see footnotes (5) and (6)). EPA recommends performing both a pressure and vacuum leak check.
Change probe length and/or location.	R	X		(6)		X	X	The rule indicates that a probe location change is a recertification event. EPA will conditionally allow the alternative system response check to be performed (see footnote (6)).
Routine probe filter maintenance (e.g., clean or replace coarse filter).	D					X		
Replace probe heater or sample line heaters.	D					X		

Recertification and Diagnostic Test Policy for Dilution-Extractive CEMS (1)

Description of Event	Event	RAT	7 Day Cal	Cycle Time	Linearity	Calibration	Submit	Comments
Change from dilution CEMS to in-situ CEMS.	R	X	X	X	X	X	X	The rule indicates that the permanent replacement of a system is a recertification event. Thus, all tests are required. Modify RTs 510, 520 and 530, as necessary
Change from dilution CEMS to extractive CEMS.	R	X	X	X	X	X	X	The rule indicates that the permanent replacement of a system is a recertification event. Thus, all tests are required. Modify RTs 510, 520, and 530, as necessary
Change from in-stack dilution to out-of-stack dilution methodology (or vice-versa).	R	X	X	X	X	X	X	EPA considers this to be equivalent to a monitoring system replacement. The rule indicates that the permanent replacement of a system is a recertification event. Thus, all tests are required.
Major modification to dilution air supply.	D				(5)	X	A	EPA will conditionally allow the abbreviated linearity check (see footnote (5)). EPA recommends performing both a pressure and vacuum leak check.

(vii) The relevant tests for CEMS are listed in § 75.20 (c)(1).

(2) "R" means a recertification event, and "D" means diagnostic test event.

(3) The 7-day calibration error test is not required for a "regular" non-redundant backup system (§ 75.20(d)(2)(i)).

(4) A calibration error is required after every repair or corrective maintenance event that may affect system accuracy (Part 75, Appendix B, section 2.1.3 (a)). If conditional data validation is used, a probationary calibration error test is required (§ 75.20 (b)(3)(ii)).

(5) A full, "hands-off" linearity check is recommended. However, an abbreviated linearity check is conditionally allowed (see Addendum, below). If the abbreviated test is not passed, consider it to be an aborted linearity check and perform a full linearity check. Note: SO_2 and NO_x monitors with span values $\leq$ 30 ppm are exempted from linearity checks.

(vi) A full cycle time test is recommended. However, the alternative system response check is conditionally allowed. If the system response check is not passed, perform a full cycle time test.

(X) "X" means that this test is required or that EDR record type 556 must be reported.

(A) Report EDR record type 556 only if the full linearity check or cycle time test is performed. Keep the results of all successful alternative diagnostic tests on-site and do not report them to EPA.

Recertification and Diagnostic Test Policy for In-situ CEMS (1)

Description of Event	Event	RAT	7 Day Cal	Cycle Time	Linearity	Calibration	Submit	Comments
Permanently replace NO_x, SO_2, O_2 or CO_2 analyzer with like-kind analyzer as defined in Part 75 Policy Manual Question 7.22.	R	X	X		X	X	X	The rule indicates that the permanent replacement of an analyzer is a recertification event. EPA does not require the cycle time test in this case, since the analyzer is like-kind and the rest of the system is the same. Modify RTs 510 and 530 as necessary.
Permanently replace NO_x, SO_2, O_2 or CO_2 analyzer with new analyzer which does not qualify as a like-kind analyzer.	R	X	X	X	X	X	X	The rule indicates that the permanent replacement of an analyzer is a recertification event. Thus, all tests are required. Modify RT's 510, 530 as necessary.
Replace or repair any of the following components:								
Light source	D				(5)	X	A	EPA will conditionally allow the abbreviated linearity check (see footnote (5)). For repair or replacement of other major components that are not listed here, contact EPA for a case-by case ruling.
Projection mirrors	D				(5)	X	A	
UV filter	D				(5)	X	A	
Fiberoptic cable	D				(5)	X	A	
Spectrometer grating	D				(5)	X	A	
Spectrometer mirrors	D				(5)	X	A	
Spectrometer mirror motor	D				(5)	X	A	
Replace or repair circuit board	D				(5)	X	A	EPA will conditionally allow the abbreviated linearity check (see footnote (5)).
Replace or repair minor analyzer component or perform routine analyzer maintenance (as specified in the QA/QC plan).	D					X		Examples include display, filter replacement, power cord replacement, power supply, valves, and analyzer pumps.
Change from in-situ to dry-extractive or dilution-extractive methodology.	R	X	X	X	X	X	X	The rule indicates that the permanent replacement of a system is a recertification event. Thus, all tests are required. Modify RT's 510, 520 and 530, as necessary.

Recertification and Diagnostic Test Policy for In-situ CEMS (1)

Description of Event	Event	RAT	7 Day Cal	Cycle Time	Linearity	Calibration	Submit	Comments
Change monitor location or measurement path	R	X	X			X	X	The 7-day calibration error test is required, since location changes may cause analyzer to drift, e.g., due to thermal effects or vibration. Modify RT's 510, 520, and 530, as necessary.

(1) The relevant tests for CEMS are listed in § 75.20 (c)(1).

(2) "R" means a recertification event, and "D"means diagnostic test event.

(3) The 7-day calibration error test is not required for a "regular" non-redundant backup system (see § 75.20(d)(2)(i)).

(4) A calibration error is required after every repair or corrective maintenance event that may affect system accuracy (Part 75, Appendix B, section 2.1.3 (a)). If conditional data validation is used, a probationary calibration error test is required (§ 75.20(b)(3)(ii)).

(5) A full, "hands-off" linearity check is recommended. However, an abbreviated linearity check is conditionally allowed (see Addendum, below). If the abbreviated test is not passed, consider it to be an aborted linearity check and perform a full linearity check. Note: SO_2 and NO_x monitors with span values $\leq$ 30 ppm are exempted from linearity checks.

(X) "X" means that this test is required or that EDR record type 556 must be reported.

(A) Report EDR record type 556 only if the full linearity check is performed. Keep the results of all successful alternative diagnostic tests on-site and do not report them to EPA.

Recertification and Diagnostic Test Policy for Flow Monitors (1)

Description of Event	Event	RATA	Abbreviated	Leak Check	7 Day Cal	Calibration	Report RT	Comments
Permanently replace flow monitor (includes like-kind monitor).	R	X		X	X	X	X	Edit RT 510 and 530 as needed.
Replace or repair major component of flow monitor, such as:								
Ultrasonic transducer	D		X			X	X	
Ultrasonic transducer interface (electronics)	D		X			X	X	
Differential Pressure Probe	D		X	X		X	X	Perform abbreviated flow to load ratio test. Perform a RATA if abbreviated flow to load test is failed. (Part 75, App. B, section 2.2.5.3). Note that there are no appropriate 600-level EDR records for reporting the abbreviated flow-to-load ratio diagnostic test. Therefore, only RT 556 is required when this diagnostic test is performed. Keep the test data and calculated results on-site, in a format suitable for inspection.
Differential Pressure Transducer/transmitter electronics	D		X	X		X	X	
Thermal Probe	D		X			X	X	
Thermal Electronics to condition/convert probe signal to calculated flow	D		X			X	X	
Replace or repair minor component of flow monitor, such as:								
Ultrasonic Purge system components, such as filters or fans	D					X		Perform any diagnostic testing as recommended by the manufacturer.
Differential Pressure Back-purge probe cleaning system components	D			X		X		
Thermal Probe cleaning system components	D					X		
Change polynomial coefficients or K factors used to compute flow.	D	X				X	X	3-load RATA required, except for monitors installed on peaking units and bypass stacks, which require only a normal-load RATA. (§75.20(c)(2)(ii)(A))

(1) The relevant tests for FLOW CEMS are listed in § 75.20 (c)(2) and Part 75, Appendix B, sections 2.2.2 and 2.2.5.3.
(2) "R" means a recertification event, and "D" means diagnostic test event.
(3) For differential pressure flow monitor only .
(4) The 7-day calibration error test is not required for a "regular" non-redundant backup system (see § 75.20 (d)(2)(i)).
(5) A calibration error is required after every maintenance event that may affect system accuracy (Appendix B, section 2.1.3 (a)). If conditional data validation is used, a probationary calibration error test is required (§ 75.20 (b)(3)(ii)).
(X) "X" means that this test is required or that EDR record type 556 must be reported.

Recertification and Diagnostic Test Policy for Flue Gas Moisture Sensors (1)

Description of Event	Event	RATA	Report RT 556	Comments
Permanently replace a flue gas moisture sensor	R	X	X	Edit RT 510 as necessary.
Replace or repair moisture sensor electronics.	D			Perform any diagnostic testing as recommended by the manufacturer.
Change the K-factor or mathematical algorithm used to compute percent moisture	D	X	X	If a K-factor or mathematical algorithm is used to set up the sensor vs. Method 4, the rule requires a diagnostic RATA whenever this K-factor or algorithm is changed.

(1) The relevant tests for a moisture meter are listed in § 75.20 (c)(6), Appendix A, section 6.5.7, and Appendix B, section 2.3

(2) "R" means a recertification event, and "D"means diagnostic test event.

(3) Moisture RATA consists of comparison with EPA Method 4

(X) "X" means that this test is required or that EDR record type 556 must be reported.

Recertification and Diagnostic Test Policy for Fuel Flowmeters (1)

Description of Event	Event	Flowmeter	Transmitter	Primary Element	Re-determine Flow	Report	Comments
Replace a fuel flowmeter with one certified by design (e.g., orifice, nozzle, or venturi-type).	R		X	X	X	X	Edit RT 510 and 540 as necessary.
Replace a fuel flowmeter with one certified by actual calibration.	R	X				X	Edit RT 510 and 540 as necessary.
Replace primary element of a fuel flowmeter that was certified by actual calibration.	D	X				X	Examples of primary elements include vortex shedding element of vortex fuel flowmeter, turbine of turbine meter, coriolis flow tubes or vibrating element of coriolis meter, and transmitters or transducers of ultrasonic meters.
Replace primary element of fuel flowmeter that was certified by design with an element of the same dimensions.	D			X		X	
Replace primary element of fuel flowmeter that was certified by design with an element of different dimensions.	D			X	X	X	
Replace or repair flowmeter electronics.	D						Perform any diagnostic testing as recommended by the manufacturer.

(1) The relevant tests for fuel flowmeter are listed in Part 75, Appendix D, sections 2.1.5 and 2.1.6.
(2) "R" means a recertification event, and "D" means diagnostic test event.
(3) Calibration by a reference flowmeter, by the manufacturer or by a laboratory (Part 75, Appendix D, section 2.1.5).
(4) Transmitter calibrations and primary element inspection only apply to orifice, nozzle and venturi-type fuel flowmeters (Part 75, Appendix D, sections 2.1.6.1 and 2.1.6.4).
(5) Redetermine orifice, nozzle or venturi flow coefficients using the procedures of AGA Report No. 3 or ASME MFC-3M whenever you change the size of the primary orifice, nozzle or venturi (Part 75, Appendix D, section 2.1.5.1)
(X) "X" means that this test is required or that EDR record type 556 must be reported.

Diagnostic Test Policy for DAHS (1)

Description of Event	Event	Formula	Missing Data	RATA	Linearity	Calibration	Submit	Comments
Replace entire DAHS (i.e., different vendor).	D	X	X			X	X	Modify RT 510 as necessary.
Upgrade DAHS to support a new EDR version using existing hardware, same equations and algorithms to calculate emissions data.	D	X	X				X	See Policy Manual question 14..96.
Change or insert new temperature, pressure or molecular weight correction algorithms(3) in DAHS, for dilution systems	D			X	X	X	X	EPA recommends these type of changes be made immediately prior to the RATAs for affected systems.
Change or insert mathematical algorithm(3) in DAHS, for correcting measured NO concentration to total NO_x	D			X		X	X	EPA recommends this type of change be made immediately prior to the RATA for affected system.
Change missing data algorithm in DAHS.	D		X				X	

(1) The relevant tests are listed in §§ 75.20 (c)(1) and (c)(9).
(2) "R" means a recertification event, and "D" means diagnostic test event.
(3) Contact EPA to discuss the appropriate diagnostic tests if other types of mathematical algorithms are changed or inserted in the DAHS
(X) "X" means that this test is required or that EDR record type 556 must be reported.

References: § 75.20(b), § 75.21, Appendix B

Key Words: Recertification Test Requirements, Diagnostic Testing

History: First published in October 2003 Revised Manual

Addendum: Alternative Diagnostic Tests

Introduction

For certain component repairs, replacements or other changes made to a monitoring system, EPA will conditionally allow alternative diagnostic tests to be performed, in lieu of a full Part 75 quality-assurance test. The conditions are that if the alternative test is failed, the monitoring system will be considered out-of-control until corrective actions are taken and a full Part 75 QA test of the same type has been passed, "hands-off." The results of successful alternative diagnostic tests need only be kept on-site (e.g., recorded in maintenance logs) and do not have to be reported to EPA.

Abbreviated Linearity Check

For gas monitors, an abbreviated linearity check is allowed in place of a full linearity check, wherever "(5)" is indicated in the "Linearity Check" column in the Tables above. The monitor must be "in-control" with respect to its RATA requirement before beginning this check (see Appendix B, section 2.2.3 (a)). The abbreviated linearity check procedure is as follows:

(1) Perform a "hands-off" calibration error test of the monitor. The calibration error for both the zero and upscale gases must be within the performance specifications in section 3.1 of Appendix A. That is:

- For SO_2 and NO_x monitors, the calibration error (CE) must not exceed 2.5% of the span value. Alternatively, for SO_2 or NO_x span values < 200 ppm, the results are acceptable if the absolute difference between the tag value of the reference gas and the analyzer response, i.e., $|R - A|$, does not exceed 5 ppm; or

- For CO_2 and O_2 monitors, the CE, expressed as $|R - A|$, must not exceed 0.5% CO_2 or O_2.

You may perform routine or non-routine calibration adjustments prior to the hands-off calibration error test, as described in sections 2.1.3 (b) and (c) of Appendix B.

(2) Following the hands-off daily calibration error test, check the linearity of the monitor (also "hands-off"), by performing 3 sequential calibration gas injections, i.e., one injection of a low-level gas (20-30% of span value), one mid-level gas injection (50-60% of span value) and one high-level injection (80-100% of span value). These three calibration gases are the same ones used for a full Part 75 linearity check. You may use the conditional data validation procedures in § 75.20 (b)(3) for the abbreviated linearity check. If you elect to use this option, the calibration error test in (1), above, may serve as the probationary calibration error test, and the abbreviated linearity check must be completed within 168 unit operating hours of the probationary calibration error test.

(3) The results of the abbreviated linearity check are acceptable if the Part 75 linearity specification is met for each gas injection. That is:

- For SO_2 and NO_x monitors, the linearity error (LE) must not exceed 5.0% of the tag value of the reference gas. Alternatively, the results are acceptable if $|R - A|$ does not exceed 5 ppm; or

- For CO_2 and O_2 monitors, the LE must not exceed 5.0% of the reference gas tag value. Alternatively, the results are acceptable if $|R - A|$ does not exceed 0.5% CO_2 or O_2.

(4) If the abbreviated linearity check is passed, keep the results on-site for inspection and audit purposes. Do not report the results to EPA. Report only the results of the hands-off calibration error test in EDR record type 230.

(5) If the abbreviated linearity check is failed, treat it as an aborted linearity check (see section 2.2.3 (b)(2) of Appendix B) and follow it up with a full linearity check. Use the data validation rules in section 2.2.3 (e) of Appendix B pertaining to aborted linearity checks. Since an aborted linearity check affects data validation, it must be reported to EPA in the electronic quarterly report (see section 2.2.3 (h) in Appendix B and the EDR Reporting Instructions for RT 601).

Alternative System Response Test

For gas monitors, an alternative system response test is allowed in place of a full cycle time test, wherever "(6)" is indicated in the "Cycle Time Test" column in the Tables above. The alternative system response test procedure is as follows:

(1) Initiate a daily calibration error check of the monitor.

(2) Wait until a stable reading with the zero-level calibration gas has been attained. Start a timer (e.g., a stopwatch) when injection of the upscale calibration gas begins.

(3) Stop the timer when the analyzer reading reaches the 95% response level (i.e., when the measured gas concentration has risen to a level that is within 5% of the tag value of the upscale calibration gas).

(4) The results of the alternative system response test are acceptable if the measured response time is $\leq$ 15 minutes.

(5) If the alternative system response time is failed, declare the monitor out-of-control. Follow up with a full cycle time test after corrective actions are taken.

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SECTION 14
DAHS, RECORDKEEPING, AND REPORTING

Page

Page

Page

Question 14.1 RETIRED

Question 14.2 REVISED

Topic: Quarterly Reporting -- First Report

Question: When is the owner or operator of a source responsible for capturing and reporting emissions data for a unit that is coming on-line?

Answer: For the purposes of the Acid Rain Program there are two situations that dictate when an owner or operator of a source must begin capturing and reporting emissions data. First, for a new unit for which data were not previously reported under Part 75, the owner or operator must begin reporting emission data by means of an automated data acquisition and handling system (DAHS) beginning either on the date of provisional certification of the continuous emission monitoring systems (CEMS) or in the first hour following the applicable certification deadline, whichever date is earlier. For a new unit, the CEMS must be provisionally certified no later than 90 unit operating days or 180 calendar days (whichever occurs earlier) after the commencement of commercial operation. For a retired unit that loses its exemption from Acid Rain requirements, the owner or operator must capture and report data beginning with the hour that it recommences commercial operation as if it were a new unit.

Second, for an affected unit that has been shutdown since the beginning of the Acid Rain program but is now coming back on-line (deferred unit), emissions data must be reported beginning with the first hour of commercial operation in accordance with § 75.64(a). The owner or operator must complete certification testing for the deferred unit by the earlier of either 90 unit operating days or 180 calendar days (whichever comes first) after the recommences commercial operation in accordance with § 75.4(d).

Please refer to the table below for a summary of data collection and reporting requirements for new units in the Acid Rain Program.

For the purposes of the NO_x Budget Trading Program, sources must begin capturing and reporting all values required to determine NO_x mass emissions data (e.g. NO_x emission rate and heat input, or NO_x concentration and stack flow rate) from the date and hour that the unit starts operating. Reporting of data prior to initial certification must be done in accordance with § 75.70(g). For new electrical generating units, the CEMS must be provisionally certified no later than 90 days after the date on which the unit commences commercial operation. For new non-electrical generating units, the CEMS certification deadline is 180 days after the date the unit commences operation.

ARP Data Collection and Reporting Requirements for New and Previously Deferred Units

Unit Operation Category	Responsible for Capturing Data	Responsible for Certifying CEMS[1]	Responsible for Reporting Data	Approved Data Source
Deferred	Capture data beginning with the first hour of recommencing commercial operation. (§ 75.64(a))	Complete certification testing by the earlier of: 90 unit operating days; or 180 calendar days (whichever occurs first) after commencing commercial operation. (§ 75.4(d))	Submit report beginning with the calendar quarter corresponding to the date of recommencing commercial operation. (§ 75.64(a))	From the hour of recommencing commercial operation until all certification tests are completed, use maximum potential values, reference methods (under § 75.22(b)), or an EPA approved alternative. Maximum values are determined using Appendix A, Sections 2.1.1.1, 2.1.2.1, 2.1.3.1, 2.1.3.2, and 2.1.4.1, and Appendix D, Sections 2.4.1 and 2.4.2.2. Alternatively, for CEMS, you may use the conditional data validation procedures in § 75.20(b)(3).
Retired	Any retired unit that loses the retired unit exemption will be considered a new unit on the date that it recommences commercial operation. (§ 72.8(d)(6)(B)(ii), see new unit).	**See new unit.**	**See new unit.**	**See new unit.**
New	Capture data beginning with the earlier of: the hour of provisional certification; or, the hour corresponding to the relevant certification deadline. (§ 75.64(a))	Complete certification testing the earlier of 90 unit operating days or 180 calendar days after commencing commercial operation (§ 75.4(b)(2))	Submit report beginning with the earlier of: the calendar quarter corresponding to the date of provisional certification; or, the calender quarter corresponding to the date for the relevant initial certification deadlines. (§ 75.64(a))	If the certification tests are passed prior to the certification deadline, report provisional data as "quality-assured" from hour of provisional certification until the certification application is approved or disapproved. If the certification tests are not passed prior to the certification deadline, use maximum potential values until certification testing is completed, except when the conditional data validation procedures of § 75.20 (b)(3) are used. Maximum values are determined using Appendix A, Sections 2.1.1.1, 2.1.2.1, 2.1.3.1, 2.1.3.2, and 2.1.4.1, and Appendix D, Sections 2.4.1 and 2.4.2.2.

[1] For a deferred unit, § 75.4(d) presently contains language that the source is responsible for data for all unit operating hours once it is back on-line. It is EPA's intent to modify this language to more clearly support the use of commercial operating hours as a trigger for hourly emissions accountability as specified in § 75.64(a). At present, use the provisions of § 75.64(a).

References: § 75.64(a); § 75.4(a) and (d); § 97.70(c)

Key Words: Deadlines, Quality assurance, Reporting

History: First published in Original March 1993 Policy Manual; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 14.3

Topic: Recordkeeping

Question: The recordkeeping requirements at § 72.9(f)(1) state that records (including all emission monitoring data) must be kept on site at the source for a period of five years from the date the document is created. The recordkeeping requirements at § 75.57(a) state that records required by Part 75 (CEM data) must be kept for three years. Should we keep CEM records on site for five years or for three years?

Answer: Since § 72.9(f)(1) begins with the qualifying statement "Unless otherwise provided...," the record retention requirements in § 75.57(a) supersede those in §72.9(f)(1). Therefore, a retention period of three years is adequate for the types of records specified in § 75.57(a).

References: § 72.9(f)(1), §75.57(a)

Key Words: Recordkeeping

History: First published in Original March 1993 Policy Manual; revised in October 1999 Revised Manual

Question 14.4

Topic: Recording Data Availability

Question: The percent monitoring availability requirement for a CEM system (§ 75.32) calls for hourly calculations even when no data are missing. Would it be appropriate to calculate availability only when there are missing data and at the end of each quarter instead of redundant calculations every hour? Where will this data be recorded in the Electronic Report File Formats?

Answer: Once you begin using the standard missing data procedures of § 75.33, you must calculate hourly percent monitor data availability (PMA) for each hour in which quality-assured data are reported. However, calculation of PMA is optional during missing data periods. For further discussion of PMA and missing data

periods, see Section II.C.(12), "Missing Data & Percent Monitoring Data Availability" in the EDR v2.1/2.2 Reporting Instructions. See also the instructions for reporting PMA under RTs 200, 201, 210, 211, and 320 in that document.

References: § 75.57(c) - (f)

Key Words: Electronic report formats, Missing data, Recordkeeping

History: First published in Original March 1993 Policy Manual; revised in October 1999 Revised Manual

Question 14.5

Topic: Recording Hourly Data

Question: How does the utility report hourly data when they change time standards (e.g., from EST to daylight savings time or vice-versa)?

Answer: All data are to be reported in standard time. See Section II.C.(6), entitled "Reporting in Standard Time" in the EDR v 2.1/2.2 Reporting Instructions.

References: § 75.57

Key Words: Recordkeeping, Reporting

History: First published in Original March 1993 Policy Manual; revised in October 1999 Revised Manual

Question 14.6 REVISED

Topic: Calculation Equations

Question: The monitoring plan submission will include the equations used to calculate emissions data (see citation at § 75.53(e)(1)(vi)). Assume that during EPA review of the monitoring data it is discovered that an equation is in error. Would data be invalidated if the data could simply be corrected by modifying the equation?

Answer: Issues of this type will have to be handled on a case-by-case basis. However, the Agency will develop a procedure to address data errors, omissions, and discrepancies.

References: § 75.53(e)(1)(vi)

Key Words: Missing data, Monitoring plan, Recordkeeping

History: First published in Original March 1993 Policy Manual; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 14.7

Topic: Missing Data -- Electronic Format

Question: If data are missing for a recorded parameter, and no explicit data substitution is necessary, what should be reported to EPA for that particular field?

Answer: An example would be the reporting of hourly gross unit load or steam load in § 75.57(b)(2). There is no specified missing data procedure in Part 75 for this parameter. If load data are missing, report the best available estimate of the load for the hour, based upon knowledge of process conditions and engineering judgment.

References: § 75.57

Key Words: Electronic report formats, Missing data, Reporting

History: First published in May 1993, Update #1; revised in October 1999 Revised Manual

Question 14.8

Topic: DAHS Verification

Question: If a DAHS includes a LAN or a WAN, will it be necessary to perform DAHS verification testing on each terminal hooked to the LAN or WAN?

Answer: No. Only the installed DAHS software must be tested, and on a LAN or WAN, this may be accomplished by performing the testing on any one of the attached terminals.

References: § 75.20(c)(7)

Key Words: DAHS

History: First published in May 1993, Update #1

Question 14.9 RETIRED

Question 14.10 RETIRED

Question 14.11 RETIRED

Question 14.12

Topic: QA Test Results

Question: Must the calculated result for tests (e.g., confidence coefficient) be calculated by the DAHS? Or could it be added to the ASCII flat file manually?

Answer: The information may be added to the ASCII file manually. See Section II.C.(3)(d), "RATA Data" in the EDR v2.1/2.2 Reporting Instructions.

References: N/A

Key Words: DAHS

History: First published in May 1993, Update #1; revised in October 1999 Revised Manual

Question 14.13 RETIRED

Question 14.14 RETIRED

Question 14.15 RETIRED

Question 14.16

Topic: Method of Determination Codes for NO_x

Question: What should be reported for the method of determination codes for NO_x pollutant concentration data (RT 201) and for NO_x mass emission rate (RT 320)?

Answer: The allowable method of determination codes are found in Table 4A in § 75.57. For further record type specific information, see Section III.B.(2) of the EDR

v2.1/2.2 Reporting Instructions, entitled "RT 201: NO_x Concentration Data" (in particular, see the instructions for Column 30 of RT 201) and also refer to Section III.B.(20), entitled "RT 320: NO_x Emission Rate Data" (in particular, see the instructions for Column 53 of RT 320).

References: § 75.57 (Table 4A)

Key Words: Electronic report formats, NO_x monitoring, Reporting

History: First published in November 1993, Update #2; revised in October 1999 Revised Manual

Question 14.17 REVISED

Topic: Reporting of Load Operating Levels

Question: How does an owner or operator of a unit performing a multi-load flow RATA report operating levels in RT 610, column 63, and RT 611, column 116?

Answer: Each operating level is to be reported by using its actual letter code ("L", "M," or "H") in RT 610/63 and RT 611/116. The normal load is indicated by reporting "N" in column 127 of RT 611. For further discussion of reporting RATA load levels, see Section III.D.(6) of the EDR v2.1/2.2 Reporting Instructions, entitled "RTs 610 and 611: Relative Accuracy Test Audit (RATA) and Bias Test Data and Results." In particular, see the instructions for column 63 of RT 610 and columns 116 and 127 of RT 611.

References: § 75.59(a)(5)(ii)(E); Appendix A, Section 6.5.2

Key Words: Electronic report formats, RATAs, Reporting

History: First published in November 1993, Update #2; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 14.18 REVISED

Topic: Method of Determination Codes

Question: Which MODC codes identified in Table 4A of § 75.57 are considered quality-assured monitor data for purposes of missing data substitution and availability calculations?

Answer: For Table 4A, MODC Codes 01 through 04, 14, 16, 17, 19, 20, 21, 22 and 54. Hours when these codes are used are considered quality-assured for missing data substitution purposes and for data availability calculations. Note that code 5, data from the parametric substitution method, is excluded from these lists, because the parametric monitoring procedures would be used instead of the missing data routine to calculate substitute values.

References: § 75.57 (Table 4A)

Key Words: Missing data, Recordkeeping, Reporting

History: First published in November 1993, Update #2; revised July 1995, Update #6; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 14.19

Topic: Quarterly Reporting -- Invalidation of Emissions Data

Question: What is EPA's policy on the invalidation of measured emissions data?

Answer: EPA's policy on the invalidation of measured emissions data is found in Section II.C.(3)(a) of the EDR v2.1/2.2 Reporting Instructions, entitled "Emissions Data from CEMS."

References: § 75.64

Key Words: Electronic report formats, Reporting

History: First published in November 1994, Update #4; revised in October 1999 Revised Manual

Question 14.20A

Topic: Quarterly Reporting -- Reporting of Operating Data

Question: What are the requirements for submitting operating records to EPA for the quarter?

Answer: The answer is found in Section III.B. of the EDR v2.1/2.2 Reporting Instructions, entitled "RT 300: Unit Operating Parameters."

References: § 72.96, § 75.57(b), § 75.64

Key Words: Electronic report formats, Reporting

History: First published in November 1994, Update #4; revised in March 1997, Update #11; revised in October 1999 Revised Manual

Question 14.20B

Topic: Quarterly Reporting -- Reporting of Non-operating Units

Question: What are the requirements for submitting quarterly reports to EPA when the unit or stack did not operate?

Answer: The answer can be found in Section II.C.(14) of the EDR v2.1/2.2 Reporting Instructions, entitled "Data Reporting Requirements for Non-operating Quarters."

References: § 72.96, § 75.64

Key Words: Electronic report formats, Reporting

History: First published in November 1994, Update #4; revised in March 1997, Update #11; revised in October 1999 Revised Manual

Question 14.21

Topic: Quarterly Reporting -- Interpretation of Operating Data

Question: How does EPA determine the operating status for a unit or stack in a given hour?

Answer: To determine the operating status of a unit or stack for a specific hour, EPA generally relies upon either the Unit Operating Time reported in column 18 of RT 300 (any operating time value greater than zero indicates unit operation during the hour) or the presence of reported hourly emissions.

References: § 72.96, § 75.64

Key Words: Data validity, Electronic report formats, Reporting

History: First published in November 1994, Update #4; revised in October 1999 Revised Manual

Question 14.22 RETIRED

Question 14.23 RETIRED

Question 14.24

Topic: Quarterly Reporting -- Submission of Records for Inappropriate Time Period

Question: How will EPA treat records in a quarterly file if the records represent hours for another quarter?

Answer: In general, emissions records will not be accepted for time periods outside the current reporting quarter. However, for quality assurance records, there are limited exceptions to this. For further discussion see Section II.C.(9) of the EDR v2.1/2.2 Reporting Instructions, entitled "Reporting Data Outside the Reporting Period."

References: § 75.64

Key Words: Electronic report formats, Reporting

History: First published in November 1994, Update #4; revised in October 1999 Revised Manual

Question 14.25 RETIRED

Question 14.26 REVISED

Topic: Quarterly Reports -- Missing Moisture Data

Question: If I report CO_2 and SO_2 on a dry basis or if I measure NO_x concentration and diluent on an inconsistent moisture basis, I must measure and report an hourly moisture value in RT 212 to calculate CO_2 mass emissions, SO_2 mass emissions, heat input and/or NO_x emission rate. How will EPA check the emissions and heat input calculations if the hourly moisture value is missing?

Answer: EPA's quarterly report checking software will attempt to re-calculate the reported emission rates and heat input rate values on a hourly basis. If a moisture value is necessary in the formula equation used and it cannot be found in RT 212 for the hour, and/or a default moisture value is not found in a valid RT 531, EPA's checking software will generate an error message stating that the reported emissions rate and/or heat input rate cannot be re-calculated for that hour.

References: § 75.64

Key Words: Electronic report formats, Reporting

History: First published in November 1994, Update #4; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 14.27

Topic: Quarterly Reporting -- Measured CO_2 Concentration Values of Zero During Boiler Startup

Question: If the CEMS measures a CO_2 concentration of zero during boiler unit startup, what value should be used to calculate NO_x emission rate?

Answer: Use the diluent cap value in such cases. See Section II.C.(3)(a)(2) of the EDR v2.1/2.2 Reporting Instructions, entitled "Data Entered or Edited Manually." Also see Section III.B.(20) of the EDR v2.1/2.2 Reporting Instructions, entitled "RT 320: NO_x Emission Rate Data." In particular, see the instructions for column 14 of RT 320.

References: Appendix F

Key Words: CO_2 monitoring, Electronic report formats, Reporting, Startup

History: First published in November 1994, Update #4; revised in October 1999 Revised Manual

Question 14.28 RETIRED

Question 14.29 RETIRED

Question 14.30

Topic: Quarterly Submission of EDR Formatted Monitoring Plans

Question: When I submit a quarterly report, what monitoring plan data should be included?

Answer: The requirements for electronic monitoring plan submittals are given in § 75.53(e) and (f). Specific reporting guidance pertaining to each required monitoring plan data element is found in Section III.C, "Monitoring Plan Records" in the EDR v2.1/2.2 Reporting Instructions. To ensure the completeness and quality of monitoring plan data, EPA has developed and released the Monitoring Data Checking Software (MDC) on the Acid Rain Home Page: (URL: www.epa.gov/airmarkets/monitoring/mdc/index.html).

References: § 75.53, § 75.64

Key Words: Electronic report formats, Monitoring plans, Reporting

History: First published in November 1994, Update #4 as Question 10.9; renumbered as Question 14.30 in March 1995, Update #5; revised in October 1999 Revised Manual

Question 14.31 REVISED

Topic: Monitoring Plan Submitted with Quarterly Report File

Question: When the utility submits the monitoring plan (all of the required 500 level records) in the quarterly report file, does the utility need to submit the monitoring plan in hard copy?

Answer: It is not necessary to submit a hardcopy version of the monitoring plan along with the quarterly report submittal. Sections 75.53(e) and (f) clearly separate monitoring plan information into two categories, electronic and hardcopy. Section 75.62 explains when submittal of the electronic and hardcopy portions of the plan is required.

References: § 75.53, § 75.62

Key Words: Electronic report formats, Monitoring plan

History: First published in July 1995, Update #6; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 14.32

Topic: Test Notification of Annual/Semiannual QA/QC RATAs

Question: For annual/semiannual QA/QC RATAs, what type of test notification does EPA require? Should a utility submit a test notification form? A monitoring plan checklist?

Answer: For annual/semiannual QA/QC RATAs, EPA requires that a written test notice be provided to the Administrator, to the EPA Regional Office and to the applicable State agency, in accordance with § 75.61(a)(5). No special form or format for the test notification is required; however, at a minimum, the notice should indicate the affected unit(s) to be tested, the type(s) of RATA(s) to be performed and the scheduled test date(s). The written notification may be provided by regular mail or by facsimile. The use of electronic mail is acceptable if the respective State or EPA office agrees that this is an acceptable form of notification. Note that under § 75.61(a)(5)(iii), the Administrator, the EPA Regional Office or the State air pollution control agency may issue a waiver from the RATA notification requirements for a unit or group of units, for one or more tests.

References: § 75.21, § 75.61(a)(5)

Key Words: Notice, RATAs

History: First published in July 1995, Update #6; revised in October 1999 Revised Manual

Question 14.33 REVISED

Topic: Reporting Results of Annual/Semiannual QA/QC RATAs

Question: For annual/semiannual QA/QC RATAs how should a utility report results to EPA? Electronically on a separate disk? Electronically in the quarterly report? By hard copy?

Answer: Report these test results electronically in the quarterly report required under § 75.64. Also provide hardcopy RATA results to the applicable EPA Regional Office and/or State air pollution control agency, upon request. See also Section III.D of the EDR v2.1/2.2 Reporting Instructions, entitled "Quality Assurance and Certification Data Reporting."

References: § 75.59, § 75.64(a) and (d)

Key Words: RATAs, Reporting

History: First published in July 1995, Update #6, revised in October 1999 Revised Manual

Question 14.34 RETIRED

Question 14.35 RETIRED

Question 14.36

Topic: Reporting of Partial Hours

Question: How do I account for SO_2 and CO_2 emissions and heat input rate during a partial operating hour?

Answer: Account for partial operating hours when the quarterly cumulative tons of SO_2 or CO_2 is calculated. Before summing SO_2 or CO_2 mass emissions for the quarter, multiply each reported hourly SO_2 or CO_2 mass emission rate (i.e., lb/hr or tons/hr) by the corresponding unit operating time in column 18 of RT 300, to convert it to a mass value (lbs or tons).

For example, if a unit operated only for the first 12 minutes in a clock hour and took SO_2 readings once every minute, those 12 readings would be averaged and would be reported as the average hourly concentration in the RT 200. The hourly average volumetric flow rate in RT 220 would be calculated in the same way. These values would then be substituted into the appropriate equation (F-1 or F-2) to calculate the hourly SO_2 mass emission rate reported in RT 310. Suppose, for the sake of this example, that the hourly SO_2 and flow averages for the 12 minutes of unit operation are, respectively, 500 ppm and 25,000,000 scfh. Assuming that SO_2 is measured on a wet basis, the hourly SO_2 mass emission rate reported in RT 310 would be 2,075 lbs/hr, according to Equation F-1. However, to indicate that the unit emitted SO_2 at this rate for only 12 minutes, you would report the unit operating time in RT 300, rounded to the nearest hundredth of an hour, as 0.20.

The product of the hour's SO_2 mass emission rate in RT 310 and the unit operating time in RT 300 would then give the *actual* SO_2 mass emitted during the partial unit operating hour: (2,075 lbs/hr)(0. 20 hr) = 415 lbs. This would then be added to the products of the SO_2 mass emission rates and the unit operating times for all of the other unit operating hours in the quarter and divided by 2,000 lbs/ton to determine the quarterly SO_2 mass emissions (in tons) reported in RT 301.

The quarterly CO_2 mass emissions and heat input should be reported and calculated in an analogous fashion (i.e., quantify the effects of partial unit operating hours *only* when the cumulative quarterly CO_2 mass emissions and heat input values for RT 301 are determined).

Note: There is one exception to this. If the DAHS is programmed such that it performs the calculation of SO_2 mass or CO_2 mass on an hourly basis and enters the results into the new, optional data fields for SO_2 mass (RT 310, column 35) and CO_2 mass (RT 330, column 33), then the quarterly cumulative mass of SO_2 or CO_2 emitted is determined simply by summing all of the reported RT 310/35 or 330/33 values for the quarter.

See also the "Field Descriptions and Instructions" for columns 16, 26, 62, and 72 under "RT 301: Quarterly Cumulative Emissions Data (ARP)" in the EDR v2.1/2.2 Reporting Instructions.

References: § 75.64(d); EDR v2.1/2.2 Reporting Instructions

Key Words: Electronic report formats, Reporting

History: First published in July 1995, Update #6; revised October 1996, Update #10; revised in October 1999 Revised Manual

Question 14.37

Topic: Reporting of Partial Hours

Question: There is a possible discrepancy between how utilities are reporting their SO_2 emissions. There are two interpretations of what RT 310, column 18, "Average hourly SO_2 mass emissions," should contain. For example, assume a unit runs averaging 150 lb per hour. The unit only runs ½ hour. Should 150 lb/hr or 75 lb/hr be reported for the SO_2 mass emissions rate in RT 310, column 18?

Answer: Report the 150 lb/hr mass emission rate in column 18 of RT 310 and account for the partial operating hour when calculating the quarterly cumulative mass of SO_2 emitted. Alternatively, if the DAHS is programmed to calculate SO_2 mass on an hourly basis, report the 150 lb/hr emission rate in column 18 of RT 310 and report an hourly mass emissions value of 75 lb (not lb/hr) in column 35 of RT 310. See also the answer to Question 14.36.

References: § 75.64, RT 310

Key Words: Data calculation, Electronic report formats

History: First published in November 1995, Update #7; revised in October 1999 Revised Manual

Question 14.38 REVISED

Topic: Reporting for Non-operating Affected Units

Question: For an existing affected unit which is shut down at the time of its monitor certification deadline and which remains shut down indefinitely thereafter, am I required to submit quarterly EDR reports, showing zero emissions and heat input?

Answer: No. An affected, non-retired unit which does not have certified CEMS because the unit was shut down on the applicable certification deadline in § 75.4 and has not operated since is classified as a deferred unit. The owner or operator of a deferred unit is not required to submit quarterly emissions reports for the unit until it re-commences commercial operation (see § 75.64(a)).

References: § 75.64(a)

Key Words: Designated representative, Electronic report formats, Reporting

History: First published in November 1995, Update #7; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 14.39

Topic: Reporting -- Diluent Cap

Question: Revisions to Appendix F of Part 75 allow us to calculate NO_x emission rate by substituting a diluent cap CO_2 concentration of 5.0% for boilers or 1.0% for turbines or an O_2 diluent cap concentration of 14.0% for boilers or 19.0% for turbines for a measured CEM reading whenever the diluent concentration is below 5.0% CO_2 for boilers or 1.0% for turbines or above 14.0% O_2 for boilers or 19.0% for turbines. May we use this diluent cap only in calculating the NO_x emission rate in lb/mmBtu (RT 320), and then use the actual measured CO_2 concentration for calculating heat input and CO_2 mass emissions?

Answer: Yes, when the diluent cap is used for NO_x emission rate, you may use the actual measured CO_2 concentration for heat input rate and CO_2 mass emission rate calculations, because the diluent cap may only be used when a quality-assured diluent gas reading has been obtained. The reverse is also true (i.e., if you use the diluent cap value for heat input rate and CO_2 mass calculations, you need not use it to calculate NO_x emission rate). Note, however, that for a particular hour, in which both the heat input rate and CO_2 mass emission rate are determined using CEMS, if the diluent cap is used to calculate one of these parameters, it must also be used to calculate the other. (See also Section III.B.(3) of the EDR v2.1/2.2 Reporting Instructions, entitled "RT 202: CO_2 Concentration Data (ARP).")

References: Appendix F, Sections 4.1, 4.4.1, 5.2.1, 5.2.2, 5.2.3, 5.2.4

Key Words: Diluent monitors, Reporting

History: First published in November 1995, Update #7; revised in October 1999 Revised Manual

Question 14.40

Topic: Reporting -- Diluent Cap

Question: Revisions to Appendix F of Part 75 allow us to calculate NO_x emission rate by substituting a diluent cap CO_2 concentration of 5.0% for boilers or 1.0% for turbines or an O_2 diluent cap concentration of 14.0% for boilers or 19.0% for turbines for a measured CEM reading whenever the diluent concentration is below 5.0% CO_2 for boilers or 1.0% for turbines or above 14.0% O_2 for boilers or 19.0% for turbines. Are hours when the diluent cap value is substituted for a CEM value considered missing data, resulting in lower percent monitor data availability for NO_x emission rate?

Answer: No. You may only use the diluent cap during periods when the diluent monitor is measuring valid, quality-assured data. Therefore, as with any hours of valid, quality-assured data, these hours count as quality-assured data to go in the lookback period for substitute data and they count as quality-assured hours for purposes of calculating availability. If the diluent monitor is not measuring valid, quality-assured data, use the missing data procedures in subpart D of Part 75 (§ 75.31 or § 75.33 for NO_x, § 75.31 or § 75.35 for CO_2, and § 75.36 for heat input rate).

References: §§ 75.31, 75.33, 75.35, and 75.36; Appendix F, Sections 3.3.4, 4.1, 4.4.1, 5.2.1, 5.2.2, 5.2.3, 5.2.4

Key Words: Diluent monitors, Missing data, Reporting

History: First published in November 1995, Update #7; revised in October 1999 Revised Manual

Question 14.41 REVISED

Topic: Reporting -- Diluent Cap

Question: Appendix F of Part 75 allow us to calculate NO_x emission rate by substituting a diluent cap CO_2 concentration of 5.0% for boilers or 1.0% for turbines or an O_2 diluent cap concentration of 14.0% for boilers or 19.0% for turbines for a measured CEM reading whenever the diluent concentration is below 5.0% CO_2 for boilers or 1.0% for turbines or above 14.0% O_2 for boilers or 19.0% for turbines. What should be the method of determination code in RT 320 for a NO_x system when the diluent cap is used? What should be the method of determination code in RT 202 for CO_2 concentration and for RT 330 for CO_2 mass emissions?

Answer: Use a method of determination code (MODC) of "14" in RT 320 (for NO_x). This code indicates an hour in which the NO_x emission rate was calculated using

measured NO_x concentration (RT 201) and the diluent cap. Regarding the appropriate reporting in RTs 202 and 330 when the diluent cap is used, except for when the measured values are negative or equal to zero, report the actual measured CO_2 concentration in RT 202, using an appropriate MODC (i.e., 01, 02, 03, or 04). For measured values less than or equal to zero, the diluent cap value may be reported in lieu of the measured CO_2 concentration in RT 202. Use an appropriate MODC corresponding to the control status for the CO_2 monitoring component for that hour. Do not report a MODC of 14 in RT 202. Instead, indicate by means of a "Y" flag in column 43 of RT 330 that the diluent cap value is being used to calculate CO_2 mass emissions for the hour. (See also Section III.B.(20), entitled "RT 320: NO_x Emission Rate Data" and Section III.B.(3), entitled "RT 202: CO_2 Concentration Data (ARP)" in the EDR v2.1/2.2 Reporting Instructions).

References: Appendix F, Sections 4.1, 4.4.1, 5.2.1, 5.2.2, 5.2.3, 5.2.4

Key Words: Diluent monitors, Reporting

History: First published in November 1995, Update #7; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 14.42 RETIRED

Question 14.43 RETIRED

Question 14.44 RETIRED

Question 14.45 RETIRED

Question 14.46

Topic: Reporting Heat Input -- Multiplication by Operating Time and Fuel Usage Time

Question: For Appendix E recordkeeping, do we multiply the fuel usage time by the hourly heat input rate to determine total hourly heat input prior to reading off of the NO_x correlation curve?

Answer: For Appendix E, use the unfactored heat input rate to determine the NO_x emission rate along the NO_x/heat input correlation curve. If you burn multiple fuels in an hour, then use the total heat input for each fuel for the hour (heat input rate multiplied by fuel usage time) in calculating the average NO_x emission rate for the unit for the hour (see Equation E-2). See also the instructions for RTs 323, 324, and 325 in Sections III.B.(23), (24), and (25) of the EDR v2.1/2.2 Reporting Instructions.

References: Appendix E, Sections 3.3.4, 2.4.1, and 2.4.3

Key Words: Excepted methods, Heat input, NO_x monitoring, Reporting

History: First published in November 1995, Update #7; revised in October 1999 Revised Manual

Question 14.47

Topic: Reporting Heat Input -- Multiplication by Operating Time and Fuel Usage Time

Question: When reporting heat input on an hourly basis in RT 300, do we report the unfactored heat input rate, or the factored total heat input (heat input rate multiplied by unit operating time)? Please reply also for Appendix D sources, during single and dual fuel hours.

Answer: In RT 300, column 36, report the unfactored heat input rate in mmBtu/hr. Consider the unit operating time only when calculating the cumulative heat input for the quarter. To calculate cumulative quarterly heat input, multiply each hourly heat input rate in RT 300, column 36 by the corresponding unit operating time in RT 300, column 18, and then take the sum of these products. Note that there is one exception to this. If the DAHS is programmed to calculate heat input (in mmBtu) on an hourly basis, you may report both heat input rate (column 36) and the heat input (column 57) for the hour in RT 300. If you report heat input in RT 300/57, simply sum these hourly values at the end of the quarter to obtain the cumulative quarterly heat input.

For an Appendix D source, during a single fuel hour, the heat input rate in RT 302/45 or RT 303/45 should be the same as the heat input rate in RT 300/36 for the hour. The fuel usage time in RT 302/52 or RT 303/52 should be identical to the unit operating time in RT 300/18.

For an Appendix D source, during a multiple fuel hour, it will be necessary to determine an average heat input rate for the hour. This requires multiplying the heat input rate in RT 302/45 or 303/45 by the corresponding fuel usage time in RT 302/52 or RT 303/52 for a given fuel, to obtain the hourly heat input for the fuel. Then add the individual hourly heat inputs from each fuel and divide this sum by the unit operating time in RT 300/18 to get the unit heat input rate to

enter into RT 300/36. See also Section III.B.(11), entitled "RT 300: Unit Operating Parameters" in the EDR v2.1/2.2 Reporting Instructions.

References: § 75.58(c), § 75.64; Appendix D

Key Words: Electronic report formats, Excepted methods, Heat input

History: First published in November 1995, Update #7; revised in October 1999 Revised Manual

Question 14.48 RETIRED

Question 14.49

Topic: Appendix D Reporting -- Method of Determination Codes

Question: For RT 302 (field starting in column 31), code "3" is indicated as being for maximum fuel flow rate. Is this the maximum observed or maximum potential flow rate? For consistency with substitution it would be the maximum observed. Is this correct?

Answer: No. Use code "3" for the maximum potential flow rate. If you are reporting the maximum fuel flow rate in a load range (for multiple fuel hours), use code "1." This is the code for substitute data. (See also Section III.B.(13) in the EDR v2.1/2.2 Reporting Instructions, entitled "RT 302: Oil Fuel Flow".)

References: Appendix D, Section 2.4.2

Key Words: Electronic report formats, Excepted methods, Reporting

History: First published in November 1995, Update #7; revised in October 1999 Revised Manual

Question 14.50 RETIRED

Question 14.51

Topic: Electronic Reports -- Editing Data

Question: Please clarify various Agency references to editing negative emission values that may be recorded. Under startup and shutdown conditions, the recording of negative emission values is possible, but reporting of negative values is not permitted by the Agency. Can the negative emission values manually be changed to zero?

Answer: In general, when negative emissions or percent moisture values are recorded during startup and shutdown you may replace them manually with zeros. When you replace a negative value with zero, you must also report MODC "21" for the affected gas concentration (except for CO_2), percent moisture, and, if applicable, NO_x emission rate in the appropriate EDR record types (RTs 200, 201, 212, and 320). MODC "21" may be manually entered.

For negative CO_2 values recorded during startup and shutdown, replace these with the diluent cap value instead of zero, to avoid reporting heat input rates of zero while the unit is operating. For a further discussion, see Section II.C.(3)(a)(2) of the EDR v2.1/2.2 Reporting Instructions, entitled "Data Entered or Edited Manually."

References: EDR v2.1/2.2 Reporting Instructions

Key Words: Data calculation, Electronic report formats, Reporting

History: First published in November 1995, Update #7; revised in October 1999 Revised Manual

Question 14.52

Topic: Electronic Report Formats -- Multiple Fuels

Question: In RT 302 (and 303), would the Single/Multiple Fuel flag be "M" if one type of gas and one type of oil were combusted, or is "M" to indicate that more than one type of gas (or oil) was combusted?

Answer: If more than one type of fuel (for example, oil and gas, or diesel oil and residual oil) is combusted during an hour, then "M" must be entered in RT 302, column 89 and/or RT 303, column 59. This information is necessary to implement Appendix D fuel flowmeter missing data procedures which require a look back to single-fuel hours to fill in for missing data when one fuel is combusted and a look back to multiple fuel hours when multiple fuels are combusted. See also Section III.B.(13), in the EDR v2.1/2.2 Reporting Instructions, entitled "RT 302: Oil Fuel Flow" and Section III.B.(14), entitled "RT 303: Gas Fuel Flow."

References: § 75.64; Appendix D, Sections 2.4.2.2 and 2.4.2.3; EDR v2.1/2.2

Key Words: Electronic report formats, Missing data

History: First published in November 1995, Update #7; revised in October 1999 Revised Manual

Question 14.53

Topic: Fuel Usage Reporting

Question: If gas is burned for the first 20 minutes of an hour and oil and gas are co-fired for the remaining 40 minutes, are the fuel usage times for gas and oil reported as "1.00" and " 0.67", respectively, even though the fuel usage times do not add up to 1.00?

Answer: Yes. See also Section III.B.(13) of the EDR v2.1/2.2 Reporting Instructions, entitled "RT 302: Oil Fuel Flow" and Section III.B.(14), entitled "RT 303: Gas Fuel Flow."

References: § 75.64

Key Words: Data calculation, Reporting

History: First published in November 1995, Update #7; revised in October 1999 Revised Manual

Question 14.54

Topic: Monitoring Plans -- Electronic Submission

Question: Our understanding is that the entire monitoring plan must be submitted in each electronic quarterly report. Does this mean that the monitoring plans for all units at a plant, regardless of association with each other, must be submitted in a single EDR file? For instance, if a plant has a common stack CS12 for units 1 and 2, a single stack unit 3, and multiple stacks MS4A and MS4B for unit 4, should all of these monitoring plan records be reported in the same data file? If so, what is the sort order?

Answer: No. The monitoring plan records for all of these units should NOT be in the same data file. Include only the complete monitoring plan data records for the appropriate unit(s) in the one quarterly data file submitted for that (those) unit(s). In the example, the utility would submit one file which would include all of the appropriate data for CS12, unit 1, and unit 2, including the hourly records,

monitoring plan records, and quality assurance records in the standard record type order. A separate file would be submitted for unit 3. An additional separate file would be submitted which includes all of the appropriate data for MS4A, MS4B, and unit 4. See also Section II.B.(1) of the EDR v2.1/2.2 Reporting Instructions, entitled "File Content."

References: § 75.64

Key Words: Monitoring plan, Reporting

History: First published in November 1995, Update #7; revised in October 1999 Revised Manual

Question 14.55 RETIRED

Question 14.56 RETIRED

Question 14.57 RETIRED

Question 14.58

Topic: Electronic Report Formats -- CO_2 Performance Specifications

Question: Alternative Performance Specification Flag - RTs 230, 600 and 602. A unit is not considered a low emitter of SO_2 or NO_x under Section 2.3.1.2(e) or (f) of Appendix B; however, it does use the alternative CO_2 calculation for daily calibration error and 7-day calibration error tests, and linearity tests. Should the "1" or "0" flag be used?

Answer: For daily and 7-day calibration error tests of a CO_2 monitor, there is actually **no** alternative performance specification. Section 3.1 of Appendix A to Part 75 specifies that the calibration error of a CO_2 monitor is **always** expressed in percent CO_2, rather than as a percentage of span. This is considered to be the normal calibration error specification and should have a "0" flag in RT 230 and 600. The alternate specification flag in these record types applies only to SO_2 and NO_x pollutant concentration monitors at facilities that are low emitters, under Section 2.3.1.2(e) or (f) of Appendix B, of those pollutants.

Regarding linearity tests, however, Section 3.2 of Appendix A clearly identifies both a normal and an alternative performance specification for CO_2 monitors. The alternative specification is available to **all** sources, regardless of their emission levels, and may be used at **any** of the three levels (L, M, or H) of the linearity test. If the normal linearity specification (5% of the reference value) is used, then report a "0" flag in RT 602. If the alternative specification (absolute value of R-A $\leq$ 0.5 % CO_2) is used, report a "1" flag in RT 602.

See also Section III.B.(8) of the EDR v2.1/2.2 Reporting Instructions, entitled "RT 230: Daily Calibration Test Data and Results" and Section III.D.(1), entitled "RT 600: 7-Day Calibration Error Test Data and Results."

References: Appendix A, Sections 3.1 and 3.2; Appendix B, Sections 2.3.1.2(e) and (f)

Key Words: Calibration error, CO_2 monitoring, Electronic report formats, Linearity

History: First published in November 1995, Update #7; revised in October 1999 Revised Manual

Question 14.59 RETIRED

Question 14.60

Topic: Reporting a Bias Adjustment Factor for CO_2 Monitoring

Question: The regulations do not require a bias test for the CO_2 monitoring system. Section 75.59(a)(5)(iii)(G) states to report a bias adjustment factor of "1.000 for any monitoring system that passed the bias test." Is it correct to report a bias adjustment factor (BAF) of 1.000 in RT 611 for the CO_2 monitoring system, even though a bias test was not performed?

Answer: Yes. Report a BAF of 1.000 in RT 611, column 111 for the CO_2 monitoring system. See also Section III.D.(6) in the EDR v2.1/2.2 Reporting Instructions, entitled "RT 611: RATA and Bias Test Results."

References: § 75.59(a)(5)(iii)(G)

Key Words: Bias, CO_2 monitoring, Electronic report formats

History: First published in November 1995, Update #7; revised in October 1999 Revised Manual

Question 14.61 REVISED

Topic: When to Submit RT 550 (Reasons for Missing Data Periods)

Question: When should RT 550 be submitted?

Answer: RT 550 was originally created to allow electronic submission of a portion of the compliance certification requirement at § 75.64(c), which required submittal of the "... measures taken to cure the causes for the missing data periods." However, the May 26, 1999 revisions to Part 75 removed this requirement from the rule. Therefore, s Submittal of this record type is optional.

References: § 75.64(a)(2)(vi),

Key Words: Missing Data, Reporting

History: First published in November 1995, Update #7; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 14.62

Topic: Ordering of RT 550

Question: How should we order RTs 550? We would prefer to print all RTs 550 for a given parameter, then move on to the next parameter. This would mean a record ordering by parameter, then by date/time.

Answer: The proposed ordering by parameter is acceptable.

References: § 75.64; EDR v2.1/2.2

Key Words: Electronic report formats, Monitoring plan

History: First published in November 1995, Update #7; revised in October 1999 Revised Manual

Question 14.63 REVISED

Topic: RT 550 Reason Codes

Question: Adding the new reason codes for downtime for RT 550 can be done in a variety of ways. Will it be okay to include this analysis and provision to enter reasons in

software which is run at the end of each quarter? In other words, can the current real time database design be left alone?

Answer: It is not necessary to have this information electronically as part of the real time database. For example, the information in RT 550 may be generated in another software program and then merged into the quarterly report at the end of the quarter. In the event of a site visit, missing data reasons should be available in some form (e.g., CEM log, maintenance log, hardcopy).

References: § 75.64

Key Words: Electronic report formats, Missing data, Reporting

History: First published in November 1995, Update #7; revised in October 2003 Revised Manual

Question 14.64

Topic: Effect of Off-line Hours on RTs 550

Question: Previously, EPA has provided guidance indicating that if a unit were down for a few hours in the middle of a missing data event, the period should be treated as a single missing data gap (and the offline hours should not be included in the determination of the gap length). In a situation like this, should only one RT 550 record be created to represent the missing data gap that happened to include a number of hours in which the unit was not operating, or should multiple records be created?

Answer: Create only one RT 550 record, so long as the missing data gap does not extend into the next calendar quarter. If the missing data gap does extend into the next calendar quarter, then follow the procedures described in Policy Manual Question 14.66.

References: § 75.64; EDR v2.1/2.2

Key Words: Electronic report formats, Missing data, Reporting

History: First published in November 1995, Update #7

Question 14.65

Topic: Effect of Overlapping Missing Data on RTs 550

Question: If CO_2 data becomes invalid at time "0," RTs 550 for the affected CO_2 and NO_x-diluent monitoring systems would have to be created. If at time "1" later (while CO_2 is still invalid), data from the NO_x analyzer becomes invalid, should another RT 550 be created for the NO_x-diluent system? If so, would the end time of the first NO_x record be equal to the hour the CO_2 data became valid, and would the end time of the second NO_x record be equal to the hour the NO_x (ppm) data became valid?

Answer: No. Create just one RT 550 for the NO_x-diluent system and report one RT 550 for the CO_2 system. The NO_x missing data period extends from time "0" (when the CO_2 monitor data becomes invalid) until <u>both</u> NO_x and CO_2 again become valid. The reason for the NO_x missing data period should describe the event that initially caused the NO_x lb/mmBtu data to be invalidated.

References: § 75.64; EDR v2.1/2.2

Key Words: Electronic report formats, Missing data, Reporting

History: First published in November 1995, Update #7; revised in October 1999 Revised Manual

Question 14.66

Topic: Effect of a Quarter Boundary on RTs 550

Question: Previously there was detailed guidance provided on how to run missing data for an event that overlaps a quarter boundary. Should RT 550 records be treated in a similar manner? Three options seem reasonable: (1) a single RT 550 is reported with actual begin and end times (when would it be reported?); (2) one RT 550 is reported with actual begin and quarter end times, followed by another RT 550 (reported next quarter) with quarter begin time and actual end time; or (3) one RT 550 is reported with actual begin and quarter end times, followed by another RT 550 (reported next quarter) with actual begin time and actual end time. What treatment would be appropriate?

Answer: The second option. Report one RT 550 with the actual beginning time of the missing data period and the quarter end time. Then in the next quarter, report another RT 550 with the beginning time for the quarter and the actual end time of the missing data period.

References: § 75.64; EDR v2.1/2.2

Key Words: Electronic report formats, Missing data, Reporting

History: First published in November 1995, Update #7; revised in October 1999 Revised Manual

Question 14.67 RETIRED

Question 14.68 RETIRED

Question 14.69

Topic: RT 550 End Time

Question: If hours 01:00 and 02:00 are missing some piece of data (e.g., SO_2 ppm), it seems obvious that the Begin Hour field (column 23) of the RT 550 should be "01." Should the End Hour field (column 31) be "02" representing the last bad hour, or "03" representing the first good hour?

Answer: Report the End Hour field as "02," the last hour of the missing data period.

References: § 75.64; EDR v2.1/2.2; RT 550

Key Words: Electronic report formats, Missing data, Reporting

History: First published in November 1995, Update #7

Question 14.70 RETIRED

Question 14.71 RETIRED

Question 14.72

Topic: Minimum Data Acquisition and Handling System Requirements

Question: What are the minimum requirements for a Data Acquisition and Handling System, particularly for Appendix D and/or E units?

Answer: The Data Acquisition and Handling System (DAHS) must electronically capture data, perform calculations, and produce electronic reports in the Electronic Data Reporting (EDR) format, as specified in Appendix A, Section 4. Note that a DAHS may have more than one component, as long as the multiple components are identified in the monitoring plan.

For Appendix D and/or E units, the DAHS system can be very simple. For example, the utility may have a multiple component DAHS, where the first component is a simple recording device which electronically captures the data from the fuel flow meter, and the second component is a commercially available spreadsheet program run on a PC with a small number of customized programming commands within the spreadsheet program to assist in the report generation. Because the fuel sampling and analysis data (% sulfur, GCV) is manually captured, it may be manually entered into the spreadsheet. The spreadsheet would then be customized to perform formula and missing data calculations (see Question 14.73), and to produce the ASCII flat file specified by the EDR format. The utility could then use the EPA developed software program, ETS-PC, to ensure that the quarterly report files are in the correct EDR format.

References: Appendix A, Section 4

Key Words: DAHS, Excepted methods

History: First published in November 1995, Update #7

Question 14.73

Topic: Data Acquisition and Handling System -- Minimum Requirements for Missing Data

Question: Are there any exceptions to the minimum requirements for a Data Acquisition and Handling System, particularly for Appendix D and/or E units?

Answer: Yes. As described in Question 14.72, an Appendix D and/or E unit could use a simple DAHS, consisting primarily of a commercially available spreadsheet. However, EPA recognizes that the missing data calculations may be difficult to program within a spreadsheet environment. Therefore, for peaking units (as defined in § 72.2) using Appendix D and/or Appendix E, EPA will consider

petitions (which may be submitted with the certification or recertification application) to use maximum potential fuel flow rate instead of following the load based missing data procedures outlined in the rule. In the monitoring plan with the petition, in RT 507, provide capacity factor information for three calendar years to demonstrate that the unit meets the definition of a peaking unit in § 72.2.

For all parameters other than fuel flow rate, use the missing data procedures specified in Part 75. For additional guidance see Questions 15.12 and 15.19.

References: Appendix A, Section 4

Key Words: DAHS, Excepted methods, Missing data

History: First published in November 1995, Update #7; revised in October 1999 Revised Manual

Question 14.74 RETIRED

Question 14.75

Topic: Validation of Stored Data during DAHS Downtime

Question: Data Acquisition and Handling Systems (DAHS) are often made up of multiple components such as a Programmable Logic Controller (PLC), which does limited data processing and short term data storage, and a PC, which does more complete data processing and long term data storage. Because of this, it may be possible to collect and store raw data during a DAHS downtime and complete the processing of that data when the complete DAHS is running again. For example, this might occur during the installation of upgraded software or when a PC crashes. May we collect and store raw data in a component such as a PLC during a DAHS downtime and then complete processing of the data when the complete DAHS system is operating again? If so, would our data be considered valid if the reason for the DAHS downtime is a change to the DAHS that requires recertification?

Answer: Yes. It is acceptable to store raw data during a period when the complete DAHS is not available (e.g., during installation and DAHS verification testing for a new software version or when the DAHS PC crashes) and later complete processing of that data in the DAHS and report that data as valid during the entire time that the DAHS was unavailable, as long as the raw data (including any necessary quality assurance data) are:

(1) Quality-assured based on all other applicable criteria (e.g., daily calibration has been passed);

(2) Stored electronically in a component (e.g., PLC, data logger) that is identified in the data pathway diagram (in the monitoring plan) of a certified system; and

(3) Captured, stored, and transferred electronically.

If the software is being upgraded, but the data storage component is not affected, data may be collected and stored in the storage component while the missing data and formula verification tests are run on the software. As long as those tests are passed, the data collected and stored in the storage component may be processed by the newly certified DAHS component and may be considered valid. Please note, however, that if the storage component (e.g., PLC, data logger) is also being modified or replaced, data may not be stored on the new or modified component until after the recertification tests are completed.

References: § 75.10(a)

Key Words: DAHS, Recertification

History: First published in March 1996, Update #8

Question 14.76 RETIRED

Question 14.77 RETIRED

Question 14.78 RETIRED

Question 14.79 RETIRED

Question 14.80 REVISED

Topic: Reporting during Gas-only Hours

Question: § 75.11(e) allows the reporting of SO_2 concentration from an SO_2 CEMS during hours when the unit is combusting only gas. The rule requires reporting of a default value of 2.0 ppm whenever the SO_2 hourly average value recorded by the CEMS is less than 2.0 ppm. How is reporting to be implemented in RTs 200 and 310? Should the 2.0 ppm be reported as an unadjusted value directly from the

monitor or as a bias-adjusted value? Is there a different method of determination code for hours when the 2.0 ppm default value is reported?

Answer: Report the default value only when the bias-adjusted hourly average SO_2 concentration is less than 2.0 ppm. Leave the unadjusted SO_2 concentration in column 29 of RT 200 blank when the default is reported. Report the 2.0 ppm value as the bias-adjusted SO_2 concentration in column 35 of RT 200. Use a method of determination code of "16" when the 2.0 ppm default value is reported. See also Section III.B.(1) of the EDR v2.1/2.2 Reporting Instructions, entitled "RT 200: SO_2 Concentration Data (ARP)" and Section III.B.(17), entitled "RT 310: SO_2 Mass Emissions Data (ARP)."

References: § 75.11(e)

Key Words: Electronic data reporting, Gas-only hours, SO_2 monitoring

History: First published in October 1996, Update #10; revised in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 14.81

Topic: Calculation of Heat Input Rate

Question: Should we use bias-adjusted flow rates to calculate and report heat input rate in RT 300?

Answer: Yes. Use the bias-adjusted flow rate when calculating heat input rate using equations F-15, F-16, F-17, and F-18. Report that heat input rate value in RT 300 for each hour. EPA considers the bias-adjusted values to be the official values for determining compliance for emissions and heat input under the Acid Rain Program. See also Section III.B.(11) of the EDR v2.1/2.2 Reporting Instructions, entitled "RT 300: Unit Operating Parameters."

References: Appendix F, Section 5.2

Key Words: Bias adjustment factor, Calculations, Heat input

History: First published in October 1996, Update #10; revised in October 1999 Revised Manual

Question 14.82

Topic: Calculation of Quarterly and Annual NO_x Emission Rates

Question: According to Equations F-9 and F-10 of Part 75, quarterly and annual NO_x emission rates should be calculated as a straight arithmetic average (i.e., the hourly NO_x emission rates should be summed and divided by the number of hourly NO_x emission rates during the quarter or the year, and should not be weighted by unit operating time). According to other EPA guidance, it appears that the quarterly and annual NO_x emission rates should be calculated as a time-weighted average (i.e., the product of the hourly NO_x emission rates and the hourly operating time should be summed and divided by the total hourly operating time). Which method is correct?

Answer: The correct method is to calculate the quarterly or annual average NO_x emission rate as a straight arithmetic average using Equations F-9 and F-10. This is the method that EPA will use to determine compliance with Part 76 NO_x emission limits. This supersedes all previous Agency guidance to the contrary. See also Section III.B.(12) of the EDR v2.1/2.2 Reporting Instructions, entitled "RT 301: Quarterly Cumulative Emissions Data (ARP)."

References: Appendix F, Section 3

Key Words: NO_x emission rates, Reporting

History: First published in October 1996, Update #10; revised in October 1999 Revised Manual

Question 14.83 RETIRED

Question 14.84

Topic: Quality Assurance RATA Notification

Question: Is EPA allowing a waiver from the requirement in § 75.61 to notify EPA of the date of periodic quality assurance RATAs?

Answer: Yes. Effective February 28, 1997, EPA has issued a waiver from the requirement to notify the Administrator (or Administrator's delegatee) of the date of periodic relative accuracy testing under § 75.61(a)(5). This waiver shall continue until the Agency issues guidance otherwise. This policy does not waive the requirement to notify the Administrator for certification/recertification RATA testing.

Note that the requirements to notify EPA Regional Offices or State or local agencies remain in effect, unless those respective agencies also issue a waiver.

References: § 75.21(e), § 75.61(a)(5)

Key Words: Notice, RATAs

History: First published in March 1997, Update #11; revised in October 1999 Revised Manual

Question 14.85 RETIRED

Question 14.86

Topic: Update to DCAS

Question: Is there any plan in the works to update or revise the DCAS or any other CEMS software certification (verification testing) programs, tool or related testing requirements?

Answer: There is no plan at this time to update DCAS. Upon converting to EDR v2.1/2.2, owners or operators (or their software vendors) must devise tests to check that the missing data algorithms are functioning properly. Likewise, checks must be made to ensure that proper equations are used to compute hourly averages for SO_2, NO_x, CO_2, heat input, and moisture for each formula submitted in RT 520. The Designated Representative (DR) or AAR must submit the following certification statements either in RT 910 or in hardcopy with the first quarterly report submitted in EDR v2.1/2.2 format:

Certification Statements:

I certify that the automated Data Acquisition and Handling System (DAHS) component of each CEM system identified here was tested and that proper computation of hourly averages for SO_2, NO_x, CO_2, and heat input for each formula submitted in RT 520 of the electronic monitoring plan, according to the requirements of 40 CFR Part 75, was verified. The results of the verification tests for each formula are available on-site in a format suitable for inspection, as required by 40 CFR 75.20(c)(9) and 75.63(a)(2)(iii).

I certify that the automated Data Acquisition and Handling System (DAHS) component of each CEM system identified here was tested and that proper computation of the missing data substitution procedures was verified according to 40 CFR Part 75. The results of the verification tests for the missing data routine

are available on-site in a format suitable for inspection, as required by 40 CFR 75.20(c)(9) and 75.63(a)(2)(iii).

References: § 75.20(c)(9), § 75.63(a)(2)(ii)

Key Words: Certification tests, DCAS

History: First published in October 1999 Revised Manual

Question 14.87

Topic: DAHS Vendor/Platform Change

Question: My question concerns DAHS vendor and platform change. We are currently planning the change in late July and I wish to verify that DAHS verification and daily calibration are all that will be required. Also I could use some clarification on data overlap and component and system ID change requirements.

Answer: DAHS verification (which includes missing data and formula verification) and daily calibration are all that will be required when you change the DAHS and platform. Please see Questions 13.4 and 13.5 in regard to the data overlap and component and system ID change requirements.

References: N/A

Key Words: DAHS

History: First published in October 1999 Revised Manual

Question 14.88

Topic: Equations in RT 585 for Source Burning Two Types of Fuel

Question: I operate a primarily coal-fired unit that occasionally burns natural gas and therefore have identified two equations in RT 520 (i.e., the standard F-1 equation and the F-23 equation (for natural gas only hours)). Am I required to submit two RTs 585 (i.e., one RT 585 for coal and CEMS and one RT 585 for natural gas)? Or do I only submit one RT 585, for coal? And what monitoring methodology should I report in column 14 of RT 585?

Answer: Submit two RTs 585 for the parameter code SO_2, one for coal and one for natural gas. In column 14 of the RT 585 for coal, use a methodology code of "CEM," to indicate that an SO_2 CEM is used when coal is burned. In column 14 of the RT 585 for natural gas, use a methodology code of "F23," to indicate that you use

Equation F-23 to calculate SO_2 emissions when natural gas is combusted. You must also report two RTs 587 for this unit, one for coal (as the primary fuel) and one for natural gas (as the secondary fuel).

References: EDR v2.1/2.2, RTs 520, 585, and 587

Key Words: Electronic report formats, Reporting, SO_2 monitoring

History: First published in October 1999 Revised Manual

Question 14.89 REVISED

Topic: Test Methods 2F, 2G, and 2H -- EDR Reporting Requirements

Question: If I use any of the new flow rate measurement methods (i.e., Methods 2F, 2G, and 2H) to perform flow monitor relative accuracy test audits (RATAs) under the Acid Rain CEM rule, are there any special recordkeeping and reporting requirements?

Answer: Yes. The recordkeeping requirements for each RATA run are found in § 75.59(a)(7)(ii), paragraphs (A) through (T), and the recordkeeping requirements for each traverse point of each RATA run are found in § 75.59(a)(7)(iii), paragraphs (A) through (M). Section 75.64(a)(2)(xiv) requires quarterly electronic reporting of this supplementary RATA support information for flow RATAs in which angular compensation (for pitch and/or yaw angles) is used and for RATAs in which wall effects adjustment factors are used.

To implement these reporting requirements, EPA has developed three new electronic record types, RT 614, RT 615, and RT 616, in EDR v2.1/2.2. These new EDR record types are to be reported along with, and in support of, the summarized RATA results in RTs 610 and 611. Record Type 614 contains run-level information, RT 615 contains traverse point-level information, and RT 616 provides RATA-level information.

For each flow RATA in which Method 2F, 2G, or 2H is used, report the applicable RATA support information in RTs 614, 615, and 616 as follows:

(1) Whenever Method 2F or 2G is used for the flow RATA, report one RT 614 for each RATA run that is used in the relative accuracy calculations. Additionally, report one RT 615 for each Method 1 traverse point in each of those test runs. Report RTs 614 and 615 in this manner when Method 2F or 2G is used, whether or not Method 2H is used to determine a wall effects adjustment factor (WAF).

(2) Whenever regular Method 2 is used for the flow RATA and a wall effects adjustment factor is determined by direct measurement, report RTs 614 and

615, but only for the RATA run(s) used to derive a wall effects adjustment factor. Report one RT 614 for each such run and one RT 615 for each Method 1 traverse point of each such run.

(3) Whenever regular Method 2 is used for the flow RATA and a default wall effects adjustment factor is used, in accordance with Method 2H, report one RT 616 for each load level at which the default WAF is applied.

(4) See Policy Question 3.37 for further guidance.

References: § 75.59, § 75.64; 40 CFR Part 60, Appendix A (RMs 2F, 2G, and 2H)

Key Words: Electronic report formats, Flow monitoring, Recordkeeping

History: First published in October 1999 Revised Manual; revised in October 2003 Revised Manual

Question 14.90 RETIRED

Question 14.91

Topic: Monitoring Plan -- Hardcopy

Question: If we submit monitoring plans electronically to States and Regions, must we still keep a hardcopy on site?

Answer: A complete monitoring plan should be available on site for inspection purposes. As long as the plan can be printed out during an inspection, it may be stored electronically (see § 75.53(e)). The Monitoring Data Checking (MDC) software, which is available from the Clean Air Markets Division Web site, may be used to print out the monitoring plan. If schematics or other parts of the plan are not available electronically, they should be kept on site in hardcopy.

References: § 75.53(e)

Key Words: Monitoring plan

History: First published in March 2000, Update #12

Question 14.92

Topic: Reporting Use of Like Kind Replacement Monitors

Question: For the use of like kind replacement (LK) monitors -- may I list the LK monitor in RT 510 every quarter instead of just the quarters I use it?

Answer: Yes.

References: EDR v2.1/2.2, RT 510

Key Words: Electronic report formats

History: First published in March 2000, Update #12

Question 14.93 RETIRED

Question 14.94 RETIRED

Question 14.95 RETIRED

Question 14.96 REVISED

Topic: DAHS Verification Following EDR Upgrade

Question: What are the DAHS verification requirements for upgrading from one EDR version to another?

Answer: Both formula verification and missing data routine verification are required. The minimum requirements are as follows:

(1) Emission and heat input rate formulas must be verified at each unit or stack location. The results of these checks must be kept on-site in a format suitable for inspection.

(2) Missing data routines may be verified either:

(i) By performing tests (e.g., an upgraded DCAS) at each location where the software is installed. If the developer of the software is able to perform

this testing for customers via network, rather than by visiting each individual site, this is acceptable; or

(ii) By installing a standard software package which has been thoroughly tested by the developer for conformance with the Part 75 missing data algorithms.

If Option (ii) above is chosen, the following additional requirements apply:

(A) The missing data software must be installed at each location using the same type of operating system on which the software was tested by the developer;

(B) The developer must provide an official statement to each user (e.g., a certificate or a letter from the appropriate corporate official) certifying that the missing data software meets the requirements of Part 75; and

(C) Each user of the software must add a provision to the QA plan for the monitoring systems (if such a provision is not already in place) to examine the values substituted by the DAHS during missing data periods for "reasonableness" (e.g., do the substituted values appear to be correct in view of the percent monitor data availability (PMA) and the length of the missing data period; do the substitute NO_x and flow rate values change when the load range changes during a missing data period; are maximum potential values substituted when the PMA drops below 80.0%; etc.). The QA plan must include a corrective action provision to resolve any problems encountered with the missing data routines expeditiously. If correction of erroneous substitute data is found to have a "significant" impact on the reported quarterly emissions or heat input (as defined in the "Quarterly Report Review Process for Determining Final Annual Data;" see Appendix C of this Policy Manual), resubmittal of the affected quarterly report(s) is required.

For both Options (i) and (ii), you must keep documentation of the tests performed to verify the missing data routines and the test results on-site in a format suitable for inspection.

(3) In the electronic quarterly report for the quarter in which you upgrade , you must include the following certification statements (as applicable) in RT 910 of the quarterly report file:

I certify that the automated Data Acquisition and Handling System (DAHS) component of each CEM system was tested and that proper computation of hourly averages for SO_2, NO_x, CO_2, and heat input rate for each formula submitted in the monitoring plan, according to the requirements of 40 CFR Part 75, was verified.

I certify that the automated Data Acquisition and Handling System (DAHS) component of each CEM system was tested and that proper computation of the missing data substitution procedures was verified according to 40 CFR Part 75.

I certify that the automated data acquisition and handling system (DAHS) component of each Appendix D system was tested, and that the DAHS correctly identifies any data that is generated using the missing data routines. In addition, I believe that the DAHS performs missing data substitution procedures set forth in Appendix D of Part 75 and clarified by EPA guidance.

I certify that the automated data acquisition and handling system (DAHS) component of the Appendix E system was tested, and that the DAHS correctly identifies any data that is generated using the missing data routines. In addition, I believe that the DAHS performs missing data substitution procedures set forth in Appendix E of Part 75 and clarified by EPA guidance.

References: EDR v2.1/2.2

Key Words: DAHS

History: First published in March 2000, Update #12; revised in October 2003 Revised Manual

Question 14.97 RETIRED

Question 14.98 REVISED

Topic: EPA's Quarterly Report Checking Software

Question: How can we see a list of all of the current checks and error messages that are in EPA's quarterly report checking software so we can test our data before submission?

Answer: When using ETS-FTP (EPA's current quarterly report submission software) one can submit reports to the "test" and "official" region. A submission to the test region allows users to retrieve feedback results from EPA's checking software before making an "official" submission. Another way to check data before it is submitted to EPA is by using MDC hourly checking software which contains many of the same hourly checks as are in EPA's checking software. The MDC hourly checking software is available on the Clean Air Markets Division's (CAMD) website. Also, posted on CAMD's website is a document which contains all of the error messages that EPA's checking software currently issues. This document lists the error code, message text, and whether it is a critical error (Status 5), rejection error (Status 6) or informational error (Status 9). EPA also has updated the "Quarterly Report Review Process for Determining Final Annual Data." This document contains information on the data review process and how EPA determines annual emissions. This is also available on CAMD's website and is also included in Appendix C of the Policy Manual.

References: EDR v2.1/2.2

Key Words: Electronic report formats, Reporting

History: First published in March 2000, Update #12; revised in October 2003 Revised Manual

Question 14.99 RETIRED

Question 14.100 REVISED

Topic: Submission of RATA Records

Question: Do we submit the most recent RATA summary records (RTs 611) in every quarterly report or only in the quarter in which we performed the RATA?

Answer: Include complete RATA data (RTs 610 and 611) only for the quarter in which a RATA is performed. Do not include the RTs 611 in subsequent quarterly reports.

References: EDR v2.1/2.2, RTs 610 and 611

Key Words: RATAs, Reporting

History: First published in March 2000, Update #12; revised in October 2003 Revised Manual

Question 14.101

Topic: Minimum Default Unit Load

Question: During certain operating conditions (e.g., startup), a unit may not have any measurable load in megawatts or klb/hr of steam. This creates a problem in the reporting of unit heat input rates for common stacks and common pipe configurations, because the heat input rate measured at the common stack (or pipe) is apportioned to the individual units on the basis of unit load. If the unit load is zero, the heat input rate apportionment equation (Equation F-21a or F-21b) will assign an hourly heat input rate of zero to the unit, irrespective of whether the unit is combusting fuel. Reporting a positive unit operating time in RT 300/18 (indicating that the unit is combusting fuel) and a zero unit heat input rate in RT 300:36 generates an error message in the feedback report for my EDR

submission. How can I avoid generating this error message and ensure that a positive unit heat input rate is reported for all hours in which a positive unit operating time is reported?

Answer: You may define a minimum default unit load, which you would use during hours of zero unit load.

A default unit load of 1.0 MWe (or 1.0 klb/hr of steam, as applicable) is recommended. However if, for a particular hour, use of a 1.0 MWe (or 1.0 klb/hr of steam) default unit load value in Equation F-21a (or F-21b) still results (after rounding off) in a zero unit heat input rate, then for that hour, use the smallest whole number value of unit load that gives a reportable unit heat input rate greater than zero.

Include in the QA plan for the facility the exact procedure used to determine unit heat input rate during unit operating hours where the unit load is zero. Manual substitution of the default unit load value and manual correction of the reported unit heat input rate is permissible for such hours.

References: EDR v2.1/2.2, RT 300

Key Words: Heat input, Reporting

History: First published in March 2000, Update #12

Question 14.102

Topic: Reporting RATA Results and Applying a BAF to a Dual Range Analyzer

Question: I have a unit with add-on NO_x controls. The unit has a dual range NO_x analyzer, which is identified as two separate, primary systems. According to Section 6.5 in Appendix A to Part 75, I only need to perform a RATA on the normal (low) range system. Will ETS give error messages if I do not report RATA results for the high range system? Also, for reporting purposes, what bias adjustment factor (BAF) do I apply to data from the high range system? The BAF of the low range system?

Answer: To ensure that no error messages are obtained, report the results of every low range RATA *twice*, once under the low range system ID and once under the high range system ID. Use the low range system BAF to adjust the emissions data recorded by both systems.

References: Appendix A, Section 6.5

Keywords: Bias adjustment factor, RATA, Reporting

History: First published in March 2000, Update #12

Question 14.103

Topic: Minimum CEMS Data Capture -- Maintenance Events

Question: Does a CEMS purge constitute a "maintenance activity" that would reduce to two the minimum number of data points required to calculate a valid hourly average under § 75.10(d)?

Answer: Yes, provided that the reason for performing the CEMS purge and the minimum acceptable frequency of the purge are clearly explained in the QA/QC plan for the unit. Note, however, that excessive, unnecessary CEMS purging may not be used as a means of circumventing the requirement to provide complete, accurate emissions accounting during all periods of unit operation. If, for a particular monitor, the required purging frequency is unusually high (e.g., once or twice per hour), EPA recommends that the utility consider replacing the monitor with one that is less maintenance-intensive.

References: § 75.10(d), § 75.5(d)

Key Words: CEMS Data calculation, Hourly average, Maintenance, Purge

History: First published in December 2000, Update #13

Question 14.104 RETIRED

Question 14.105 RETIRED

Question 14.106 RETIRED

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